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The Thirteenth International Joint Symposium on Artificial Intelligence and Natural Language Processing

KICSS 2018
The Thirteenth International Conference on Knowledge, Information and Creativity Support Systems

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Program Book

The 13th International Joint Symposium on Artificial Intelligence and Natural Language Processing (iSAI-NLP 2018)

The 13th International Conference on Knowledge, Information and Creativity Support Systems (KICSS 2018)
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# Contents

Welcome Message from the iSAI-NLP 2018 General Chairs ...................... 1
Welcome Message from the KICSS 2018 General Chairs .......................... 3
Welcome Message from the iSAI-NLP 2018 Program Chairs ...................... 5
Welcome Message from the KICSS 2018 Program Chairs .......................... 7
Welcome Message from the iSAI-NLP 2018 and KICSS 2018 Organizing Committees .......................................................... 9
iSAI-NLP 2018 Organization Committees .................................................. 11
KICSS 2018 Organization Committees .......................................................... 14
Keynote/Invited/Guest Speakers ................................................................. 16
Conference Overall Schedule (Day 0) .......................................................... 30
Conference Overall Schedule (Day 1) .......................................................... 31
Conference Overall Schedule (Day 2) .......................................................... 32
Conference Overall Schedule (Day 3) .......................................................... 33
Detailed Schedule ......................................................................................... 34
iSAI-NLP 2018 Abstracts ............................................................................. 60

- Text-clustering Based Deep Neural Network for Prediction of Occupational Accident Risk: A Case Study .................. 61
- Open Traffic Data Exchange and Collaborative Platform ...................... 62
- Semantic Similarity Measure for Thai Language ...................................... 63
- Analysis of Communicative Phrase Prosody based on Linguistic Modalities of Constituent Words ......................................................... 64
- YouTube AV 50K: An Annotated Corpus for Comments in Autonomous Vehicles .............................................................. 65
- An Efficient Manifold Ranking Approach for Monolithic Graphs and Semantic Networks ................................................................. 66
- A Preliminary Study on Fundamental Thai NLP Tasks for User-generated Web Content .............................................................. 68
- Chatbot: An Automated Conversation System for the Educational Domain .................................................................................. 69
Estimation of Spectral Abundance Fractions using Fixed Acceleration Coefficients PSO Approach ................................................................. 70

Determining Physical Location of Wireless Access Point using Smart Devices................................................................................................. 71

Machine Learning Classifications of Coronary Artery Disease.................. 72

Prediction of Dissolved Oxygen Concentration for Shrimp Farming using Quadratic Regression and Artificial Neural Network............... 73

A Lexicographic Management System towards Linguistic Metacognition Tracking.......................................................................................... 74

Social Media Account Extraction for Thai Celebrities................................ 75

Classification of Terrain Types in Unmanned Aerial Vehicle Images..... 76

SAFLOOR: Smart Fall Detection System for the Elderly ......................... 77

MEDiDEN: Automatic Medicine Identification using a Deep Convolutional Neural Network ............................................................................. 78

The Estimation of Stability of Semantic Space Generated by Word Embedding Algorithms ................................................................. 79

A Study on Applying an Autoregressive Model with the Kalman Filtering in Accuracy Improvement of Dissolved Oxygen Measurement ........................................................................................................ 80

Cross-modal Correlation Analysis between Vowel Sounds and Color*... 81

An Analyze Movement Path of Employees in Fire Drill by Indoor Location System using Bluetooth.............................................................. 82

Comparison of Machine Learning Algorithm’s Performance based on Decision making in Autonomous Car......................................................... 83

Indoor Positioning Estimation using BLE Beacons .................................... 84

Exploring Efficiency of Data Mining Techniques for Missing Link in Online Social Network...................................................................................... 85

Activity Recognition using Kinect and Comparison of Supervised Learning Models for Activity Classification.................................................... 86

Extractive Summarization for Myanmar Language ........................................ 87
Siamese LSTM with Convolutional Similarity for Similar Question Retrieval ................................................................. 88
Modeling for Robot-Driven Prototype Automation ................................................. 89
Speech Watermarking Technique based on Singular Spectrum Analysis and Automatic Parameter Estimation using Differential Evolution for Tampering Detection ......................... 90
Sentiment Classification with Gated CNN for Customer Reviews .......... 91
Keyphrase Extraction as Topic Identification using Term Frequency and Synonymous Term Grouping ........................................ 92
Machine Learning Methods for Assessing Freshness in Hydroponic Produce ....................................................................... 93
Text Normalization on Thai Twitter Messages using IPA Similarity Algorithm ........................................................................... 94
The Study of Factors and Model Creation for Predicting Academic Achievement using Support Vector Machine ................................................. 95
Comparative Assessment of Indoor Positioning Technologies, Techniques, and Algorithms ................................................................. 96
Blind, SVD-based Scheme for Information Hiding in Digital Images ..... 97
The Limb Leads ECG Signal Analysis in Inferior Myocardial Infarction Patients by Rule Base ................................................................. 98
Simplicity of Positive Reviews and Diversity of Negative Reviews in Hotel Reputation ............................................................................. 99
Quality Classification of ASEAN Wikipedia Articles using Statistical Features ............................................................................. 100
Semantic-based Relationship between Objective Interestingness Measures in Association Rules Mining ................................. 101
Classification of Tweets Related to Illegal Activities in Thai Language ......................................................................................... 102
Model for Handwritten Recognition based on Artificial Intelligence ...................................................................................... 103
3D Foreground Point Segmentation from Background using Centroid-based Min-Cut Method ......................................................... 104
Visual Big Data Analytics for Sustainable Agricultural Development... 105
Applied Artificial Optimization Algorithm in Design Flaws Detection... 106
A Supporting Tool for Learning to Improve Thinking Skill through Reading Activities ........................................... 107
Thai Sentiment Analysis via Bidirectional LSTM-CNN Model with Embedding Vectors and Sentic Feature................... 108
Predicting Learning Organization Factors that Affect Performance by Data Mining Techniques.................................................... 109
A Comparative Study of Classification Liver Dysfunction with Machine Learning......................................................... 110

iSAI-NLP 2018 Abstracts (Thai Track).............................................................................................................. 111
Evaluating Website Performance by Designing Human-computer Interaction ............................................................. 112
Data Analytics for Capacity of Health Services in Thailand using R Programming Language ........................................... 113
Driving Behavior Surveillance System using Facial Feature Detection 114
Analysis of Government Projects for the National Strategy and Country Reform plan................................................... 115
Automatically Classifying Government Project ........................................ 116
Proposals according to the National Strategic Program using Text Mining Techniques ................................................ 116
Development of Dataset Integration Tool for Open Data .............. 117

KICSS 2018 Abstracts ................................................................................................................................. 118
Block Sweetie: Learning Web Application Development by Block Arrangement.......................................................... 119
Effect of Auto-complete Function on Processing Web IDE for Novice Programmer ................................................ 120
Proposal and Evaluation of Contribution Value Model for Creation Support System .................................................... 121
Intermodal Network Design in Freight Transportation Systems...... 122
The AI Model Canvas for Successful Startup Companies in Education. 123

Designing a Soft-skill Cultivation Platform for Health Care Professionals (HCPs): A Study of BRAC’s Community Health Workers (CHW) of Bangladesh .............................. 124

Study of Intellectual Capital in Japanese Financial and Insurance Industries ............................................................ 125

A Study on Intellectual Property Strategy based on Technological Trajectory Analysis of IoT related Technology ................................................................. 126

Speaker Choice Method based on Multi-armed Bandit Algorithm for Online Discussions .................................................. 127

Indonesian Human Profiles of Good Environmental Knowledge.......... 128

Toward the Inheritance and Application of Cultural Symbols in Apparel Creativity Design: A Case Study using Seasonal Insects ................. 129

Analysis of Aging Population on Consumption Structure: Creativity in Effective Industry Supply ......................................................... 130

Improving Technology for Open Lecture Distance Learning Support Systems ............................................................................ 131

FaGoN: Fake News Detection model using Grammatic Transformation on Neural Network ................................................................. 132

A Collaborative Active Learning Method for Chance Discovery and a Virtual Coordinator of Relaxing Travels Plan with Attractive Experiences..................................................... 133

The Effect of the Semantics of Diseases to Prevention Management Fees by using Propensity Score Matching ......................... 134

Developing Innovation Skills in Second Language Education Cultivation of Creativity and Intercultural Communicative Competence ......................................................... 135

Research on Museum Lighting Design Method: Emotional Effects based on the SVOE Model and Creative Thinking .............................. 136

Finding Grammar in Music by Evolutionary Linguistics.......................... 137

Comment Evaluation by Combining Comment and Word Mutual Evaluation Method and LSTM Evaluation Method in Lecture Questionnaire ......................................... 138
Named Entity Sentiment Classifications using Peripheral Words and Dependencies in Online Discussions

A Study of Lexical Ambiguity in Large Forum Discussions for Multidisciplinary Knowledge Engineering

Generating GIF from 3D Mesh and Point Cloud: An Automated Software

Handsfree Interactive Music Game Development with Motion Sensing Technology

Constrained Clustering with Seeds and Term Weighting Scheme

An Automatic System to Detect Exudates in Mobile-Phone Fundus Images for DR Pre-screening

A Quantification Technique of Air Trapping in Lungs using Stepwise Regression and Neural Network from End-inspiratory and End-Expiratory CT-images

Weather Scenario Generation Game

A New Dimension for Smart Cities, Driven by an Economic and Localization perspective

Emotion Classification using Brainwave

Design and Implementation of Group Work Monitoring System for Exploring Creativity

Automatic Generating UML Use Case Diagram and Test Cases based on Classification Tree Method

Revealing the Important Features of Mobile Phishing

Realization of Organic and Dynamic Creativity Support Tool for Promoting Ethical AI Design

Estimation of Origin-Destination using Mobile Phone Call Data: A Case Study of Greater Dhaka, Bangladesh

Improving Plant Recognition using Hybrid features from Connectionist and Knowledge-Based Approaches

A Study of the Relationship between Color Combinations Preferences of Consumer and their Sports Lifestyle based on AIO Lifestyle Scale
Participatory Event Type MONO-ZUKURI Education Effectiveness for Future Creativity ......................................................... 156

Exploring Effective Management Style for Creative Workers with Effect Size Analysis ......................................................... 157

A Method for Online Discussion Design and Discussion Data Analysis .................................................................................. 158

A Case-based Reasoning Approach for Automated Facilitation in Online Discussion Systems .................................................. 159

A Development of an Ontology-based Personalised Web from Rice Knowledge Website ......................................................... 160

Computational Thinking for Elementary School in Japan and Art Thinking .................................................................................. 161

A Method for Supporting Medical-interview Training using Smart Devices .............................................................................. 162

Jupiter: An Automated Negotiation Environment for Supporting Agents that Use Machine Learning ............................................. 163

The Design of Meta-Strategy that Can Obtain Higher Negotiating Efficiency ........................................................................... 164

Author Index .............................................................................................................................................................................. 165

Conference Venue ........................................................................................................................................................................... 169

Hotel Map .................................................................................................................................................................................. 170

iSAI-NLP/KICSS 2018 Organizers ................................................................................................................................................... 172

iSAI-NLP/KICSS 2018 Sponsors and Supporters ....................................................................................................................... 173
Welcome Message from the iSAI-NLP 2018
General Chairs

From 2017, the symposium on Natural Language Processing (SNLP2018) has been broadened to cover the topics of Artificial Intelligence in addition to natural language processing and its name is changed to the Joint International Symposium on Artificial Intelligence and Natural Language Processing series (iSAI-NLP). The first meeting was held in 1993 by Chulalongkorn University in Bangkok, Thailand. The following conferences were held by Kasetsart University in Bangkok (1995), Asian Institute of Technology in Phuket (1997), King Mongkut’s University of Technology Thonburi in Chiang Mai (2000), SIIT, Thammasat University in Hua Hin (2002), Chulalongkorn University in Chiang Rai (2005), Kasetsart University in Pattaya (2007), Dhurakij Pundit University in Bangkok (2009), King Mongkut’s Institute of Technology Ladkrabang in Bangkok (2011), SIIT in Phuket (2013), Thammasat University in Ayutthaya (2016), and King Mongkut’s University of Technology Thonburi and Rangsit University in Hua Hin (2017).

The iSAI-NLP 2018 is hosted by the Department of Engineering, Mahidol University with the great support from Artificial Intelligence Association of Thailand (AIAT). Under the theme of Artificial Intelligence of Things (AIoT), the aim of iSAI-NLP 2018 is to promote artificial intelligence research in the four main topics; (1) natural language processing, (2) robotics/IoT/embedded system, (3) data analytic and machine learning, and (4) signal, image and speech processing. This year, it is a joint event with the 13th International Conference on Knowledge, Information and Creativity Support Systems (KICSS 2018). We are indebted to the keynote speakers, the invited speakers, the presenters, the reviewers, the organizing team for their contribution.
We also appreciate the support from the sponsors, particularly Thammasat University, Provincial Electricity Authority (PEA), KASIKORN Business-Technology Group (KBTG), Computer Union, Bangkok Insurance, Feedback180, and Thailand Convention and Exhibition Bureau (TCEB). We look forward to seeing you soon at iSAI-NLP 2018 during November 15-17, 2018 at the Pullman Pattaya Hotel G, Pattaya, Thailand.

November 2018

The iSAI-NLP 2018 General Co-Chairs

Thepchai Supnithi
(National Electronics and Computer Technology Center, Thailand)

Thanaruk Theeramunkong
(SIIT, Thammasat University, Thailand)
Welcome Message from the KICSS 2018
General Chairs

The 2018 International Conference on Knowledge, Information and Creativity Support Systems (KICSS) is the 13th meeting of the KICSS, with its first held during August 1-4, 2006 in Ayutthaya. As an annual meeting, the past KICSS conferences were held in Ishikawa, Japan (2007), Hanoi, Vietnam (2008), Seoul, Korea (2009), Chiang Mai, Thailand (2010), Beijing, China (2011), Melbourne, Australia (2012), Krakow, Poland (2013), Limassol, Cyprus (2014), Phuket, Thailand (2015), Yogyakarta, Indonesia (2016), and Nagoya, Japan (2017). This year, KICSS 2018 is co-located with the 13th International Joint Symposium on Artificial Intelligence and Natural Language Processing (iSAI-NLP 2018) and held in Pattaya, Chonburi, Thailand with nearly 120 participants. It is one of the rare conferences related to creativity support systems. With this gathering, a number of researchers related to creativity, artificial intelligence, knowledge engineering, knowledge science and system science, exchange their original ideas and current research results with each other.

On behalf of the KICSS 2018 committee, we would like to thank our keynote speakers, Nicolai Petkov (Co-Keynote Speaker of KICSS 2018 and iSAI-NLP 2018) and Satoshi Tojo, and our invited speaker, Sumate Charoenchaidet (KICSS 2018) and Chidchanok Lursinsap (iSAI-NLP 2018) for their insightful keynote and invited speeches. We would also like to express our appreciation to Susumu Kunifüji, who is the founder of KICSS, and Kiyota Hashimoto (Prince of Songkla University, Thailand) and Yukari Nagai (Japan Advanced Institute of Science and Technology, Japan) for their support as the program co-chairs.

We appreciate the publication co-chairs, Uraiwan Buatoom, Thodsaporn Chay-intr, and Chutima Beokhaimook and all the organizing committee members, Thepchai Supnithi (National Electronics and Computer Technology Center, Thailand), Narit Hnoohom (Mahidol University, Thailand) and the secretary generals, Sasiporn Usanavasin (SIIT, Thammasat University, Thailand), Thatsanee Chareonporn (Burapa University, Thailand), Choermath Hongakkaraphan (SIIT, Thammasat University, Thai-
land), and Chutima Beokhaimook (Rangsit University, Thailand) for their excellent arrangement of the conference. We also appreciate our host and co-hosts: Artificial Intelligence Association of Thailand (AIAT, Thailand), Sirindhorn International Institute of Technology (SIIT, Thammasat University, Thailand), Thailand National Electronics and Computer Technology Center (NECTEC, Thailand), Japan Advanced Institute of Science And Technology (JAIST, Japan), Burapha University (BUU, Thailand); our supporters: Japan Creativity Society (JCS, Japan) and IEEE Thailand Section (Thailand); and sponsors: Computer Union, Thammasat University, Thailand Convention and Exhibition Bureau (TCEB), Provincial Electricity Authority (PEA), KASIKORN Business-Technology Group (KBTG), Bangkok Insurance, and Feedback180. Thank you for all effort and cooperation. We are sure that KICSS 2018 is another success and hope that it further encourages participants to boldly proceed their research.

November 2018

The KICSS 2018 General Co-Chairs

Takayuki Ito
(Nagoya Institute of Technology, Japan)

Minoru Terano
(Japan Advanced Institute of Science and Technology, Japan)

Thanaruk Theeramunkong
(SIIT, Thammasat University, Thailand)
Welcome Message from the iSAI-NLP 2018 Program Chairs

The International Joint Symposium on Artificial Intelligence and Natural Language Processing (iSAI-NLP), formerly named the International Joint Symposium on Natural Language Processing (SNLP), is one of the oldest series of international conferences dedicated to natural language processing and artificial intelligence in general originating from Thailand since 1993. iSAI-NLP 2018 is the thirteenth, held at Pattaya, Thailand, 15-17 November 2018. We are pleased to have iSAI-NLP 2018 co-located with KICSS 2018. iSAI-NLP 2018, whose theme is Artificial Intelligence of Things (AIoT), consists of four tracks: natural language processing; robotics, IoT and Embedded System; data analytic and machine learning; and signal image and speech processing.

Thanks for interests from many parts of the world, iSAI-NLP 2018 received 60 submissions from China, France, India, Japan, Jordan, Myanmar, Thailand, and UAE. All the papers are rigorously reviewed by at least three anonymous reviewers, and finally we accepted 17 long papers, 30 regular papers, 1 short paper, and 2 poster papers. For this review process, we have to say that, due to rapid progress in the fields, we needed many advanced researchers who are familiar with recent development in AI and we appreciate it that many program committee members who are all experts in related areas spent their valuable time reviewing and evaluating submitted papers.

We would like to show our sincere gratitude to our keynote speakers, Nicolai Petkov (Co-Keynote Speaker of KICSS 2018 and iSAI-NLP 2018), Chidchanok Lursinsap, and Satoshi Tojo (KICSS 2018), and the invited speaker of KICSS 2018, Sumate Charoenchaidet. It is our great honor to have them. We would also like to express our appreciation to our honorary co-chairs, Vilas Wuwongse, Yoshinori Sagisaka, and Jackrit Suthakorn for their invaluable contribution to making this conference more prestigious, as well as for their advice and support. No conference can be realized without generous support and hard work of many people. We appreciate those from our general co-chairs, Thanaruk Theeramunkong and Thepchai Supnithi; publication co-chairs, Uraiwan Buatoom,
Thodsaporn Chay-intr, and Narumol Chumuang; technical programs chairs of four tracks, all the organizing committee members, international committee members, financial co-chairs, and secretary generals. We also appreciate our host and co-hosts: Artificial Intelligence Association of Thailand (AIAT), Mahidol University (MU, Thailand), Sirindhorn International Institute of Technology (SIIT, Thammasat University, Thailand), Thailand National Electronics and Computer Technology Center (NECTEC, Thailand), and Burapha University (BUU, Thailand).

Last but not least, we express our biggest gratitude to all the authors who submitted their valuable papers, who were accepted and made their presentations, and who joined active discussion at the sessions. Thank you for all your effort, cooperation, and kindness.

November 2018

The iSAI-NLP 2018 Program Co-Chairs

Kiyota Hashimoto
(Prince of Songkla University, Thailand)

Pokpong Songmuang
(Thammasat University, Thailand)
Welcome Message from the KICSS 2018 Program Chairs

The International Conference on Knowledge, Information and Creativity Support Systems (KICSS) is quite a unique international conference with its scope and topics. As the conference name describes, a variety of information systems, together with their underlying theories and technologies that help people be smarter and more creative with a better quality of life, are pursued. This year, 2018, meets its 13th in Pattaya, Thailand, following the 12th in Nagoya, Japan, in 2017. KICSS 2018 is co-located with iSAI-NLP 2018. We received 55 submissions including full, short, and poster papers from Bangladesh, China, Indonesia, Japan, Myanmar, Thailand, and Vietnam. All the papers are strictly reviewed by at least three anonymous reviewers, and finally we accepted 12 long papers, 20 regular papers, 12 short papers, and 2 poster papers. For this review process, we have to say that, due to a wide variety of topics submitted, the choice of appropriate reviewers was a big issue, and we appreciate it that many program committee members who are all experts in related areas spent their valuable time reviewing and evaluating submitted papers.

We would like to show our sincere gratitude to our keynote speakers, Nicolai Petkov (Co-Keynote Speaker of KICSS 2018 and iSAI-NLP 2018) and Satoshi Tojo, and our invited speaker, Sumate Charchaidet and Chidchanok Lursinsap (iSAI-NLP 2018). It is our great honor to have them. We would also like to express our appreciation to our honorary co-chairs, Somnuk Tangtemsirikul, Sarun Sumriddetchka-jorn, and Susumu Kunifiuji for their invaluable contribution to making this conference more prestigious, as well as for their advice and support. No conference can be realized without generous support and hard work of many people. We appreciate those from our general co-chairs, Takayuki Ito, Minoru Terano, and Thanaruk Theeramunkong; publication co-chairs, Uraiwan Buatoom, Thodsaporn Chay-intr, and Chutima Beokhaimook; our workshop co-chairs, Tokuro Matsuo and Teerayut Horanont, and all the committee members. We also appreciate our host and co-hosts: Artificial Intelligence Association of Thailand (AIAT, Thailand), Sirindhorn International Institute of Technology (SIIT, Thammasat University, Thailand), Thailand National Electronics and Computer
Technology Center (NECTEC, Thailand), Japan Advanced Institute of Science And Technology (JAIST, Japan), Burapha University (BUU, Thailand); our supporters: Japan Creativity Society (JCS, Japan) and IEEE Thailand Section (Thailand); and sponsors: Computer Union, Thammasat University, Thailand Convention and Exhibition Bureau (TCEB), Provincial Electricity Authority (PEA), KASIKORN Business-Technology Group (KBTG), Bangkok Insurance, and Feedback180.

Last but not least, we express our biggest gratitude to all the authors who submitted their valuable papers, who were accepted and made their presentations, and who joined active discussion at the sessions. Thank you for all your effort, cooperation, and kindness.

November 2018

The KICSS 2018 Program Co-Chairs

Kiyota Hashimoto
(Prince of Songkla University, Thailand)

Yukari Nagai
(Japan Advanced Institute of Science and Technology, Japan)
Welcome Message from the iSAI-NLP 2018 and KICSS 2018 Organizing Committees

It is our great honor that the 13th International Joint Symposium on Artificial Intelligence and Natural Language Processing (iSAI-NLP 2018) and the 13th International Conference on Knowledge, Information and Creativity Support Systems (KICSS 2018) are jointly organized at the Pullman Pattaya Hotel G, Thailand during November 15-17, 2018. There are four keynote speeches, two invited speeches, forty-eight iSAI-NLP oral presentations, forty-four KICSS presentations and four poster presentations. In addition there are six Thai track papers and two tutorial sessions on chatbot and data analytics. The iSAI-NLP 2018 will trigger an opportunity for professors, researchers, practitioners, junior researchers, and students to exchange ideas, methods, insights, and current research progresses. The joint meeting of the iSAI-NLP 2018 and the KICSS 2018, is hosted by Department of Computer Engineering, Faculty of Engineering, Mahidol University with great support from Artificial Intelligence Association of Thailand (AIAT). On behalf of the committee, we would like to express our sincere appreciation to all committee members, presenters, reviewers, organizing teams, including secretaries and staffs, for their dedication and hard work behind the scene to make this a truly successful international conference. We sincerely hope that all of you enjoy this remarkable event. We look forward to seeing and discussing with you at the iSAI-NLP 2018 and the KICSS 2018.

November 2018

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Keynote/Invited/Guest Speakers
Representation learning with trainable COSFIRE filters

Abstract
In order to be effective, traditional pattern recognition methods typically require a careful manual design of features, involving considerable domain knowledge and effort by experts. The recent popularity of deep learning is largely due to the automatic configuration of effective early and intermediate representations of the data presented. The downside of deep learning is that it requires a huge number of training examples.

Trainable COSFIRE filters are an alternative to deep networks for the extraction of effective representations of data. COSFIRE stands for Combinations of Shifted Filter Responses. Their design was inspired by the function of certain shape selective neurons in areas V4 and TEO of visual cortex. A COSFIRE filter is configured by the automatic analysis of a single pattern. The highly non-linear filter response is computed as a combination of the responses of simpler filters, such as Difference of (color) Gaussians or Gabor filters, taken at different positions of the concerned pattern. The identification of the parameters of the simpler filters that are
needed and the positions at which their responses are taken is done automatically. An advantage of this approach is its ease of use as it requires no programming effort and little computation - the parameters of a filter are derived automatically from a single training pattern. Hence, a large number of such filters can be configured effortlessly and selected responses can be arranged in feature vectors that are fed into a traditional classifier.

This approach is illustrated by the automatic configuration of COSFIRE filters that respond to randomly selected parts of many handwritten digits. We configure automatically up to 5000 such filters and use their maximum responses to a given image of a handwritten digit to form a feature vector that is fed to a classifier. The COSFIRE approach is further illustrated by the detection and identification of traffic signs and of sounds of interest in audio signals. The COSFIRE approach to representation learning and classification yields performance results that are comparable to the best results obtained with deep networks but at a much smaller computational effort. Notably, COSFIRE representations can be obtained using numbers of training examples that are many orders of magnitude smaller than those used by deep networks.

**Keywords**: Representation learning, deep learning, COSFIRE trainable filters
Bibliography
Nicolai Petkov is professor of computer science with a chair in Intelligent Systems and Parallel Computing at the University of Groningen since 1991. He received his doctoral degree at the Dresden University of Technology in Germany. After graduation he worked at several universities and in 1991 he was appointed professor of Computer Science at the University of Groningen. He was the PhD thesis director of 31 scientists till now. He was scientific director of the Institute for Mathematics and Computer Science (now Bernoulli Institute) from 1998 to 2009, and currently he is vice-chairman of the University Council and chairman of the Science Faction since 2011. Petkov is associate editor of several scientific journals (e.g. J. Image and Vision Computing). He co-organized and co-chaired the 10th International Conference of Computer Analysis of Images and Patterns CAIP 2003 in Groningen, the 13th CAIP 2009 in Münster, Germany, the 16th CAIP 2015 in Valletta, Malta, the International Workshops Braincomp 2013, 2015 and 2017 on Brain-Inspired Computing in Cetraro, Italy, and the International Conference on Applications of Intelligent Systems APPIS 2018 and 2019 in Las Palmas de Gran Canaria, Spain. Petkov’s research interests are in the field of development of pattern recognition and machine learning algorithms that he applies to various types of big data: image, video, audio, text, genetic, phenotype, medical, sensor, financial, web, etc.[2] He develops methods for the generation of intelligent programs that are automatically configured using training examples of events and patterns of interest. See further www.cs.rug.nl/is
Abstract
Arbitrary class drift is a situation where the classes of incoming data arbitrarily change with unknown probability and time periods. The same data already learned may enter the learning process with new classes. Furthermore, the amount of data flow into the learning process may overflow the memory. This scenario actually occurs in various problems. The preliminary solution to this problem consisting of a new neural network structure and learning concept will be discussed.
Bibliography
Chidchanok Lursinsap received the B.Eng. degree (honors) in computer engineering from Chulalongkorn University, Bangkok, Thailand, in 1978 and the M.S. and Ph.D. degrees in computer science from the University of Illinois at Urbana-Champaign, Urbana, in 1982 and 1986, respectively. He was a Lecturer at the Department of Computer Engineering, Chulalongkorn University, in 1979. In 1986, he was a Visiting Assistant Professor at the Department of Computer Science, University of Illinois at Urbana-Champaign. From 1987 to 1996, he worked at The Center for Advanced Computer Studies, University of Louisiana at Lafayette, as an Assistant and Associate Professor. After that, he came back to Thailand to establish Ph.D. program in computer science at Chulalongkorn University and became a Full Professor. His major research interests include neural learning and its applications to other science and engineering areas.
Abstract
The biological origins of music and language are said to be one the same as we use ears to hear and throats to sing or to utter, however, only we human beings possess both. In this talk, we discuss the applicability of techniques on natural language processing for the music, because there must be grammatical structure either in music. Within this talk, we will make two important digressions. One is what is the communication. Language seems a meaningful, communicative part of the common origin; then, what is the meaning of music? The other digression is the cognitive bias of infant’s language acquisition, which suggests us the possibility of statistical learning of music knowledge. Thereafter, we present our formalization of music in syntactic tree, our implementation of music analyzer and several application systems, including the similarity assessing and the morphing. Finally, we close the talk by the open discussion on whether artificial intelligence come to obtain musical aesthetics and to compose music.

Keywords: Music, Natural language, Artificial intelligence, Creativity.
Bibliography
Prof. Dr. Satoshi Tojo received B.E., M.E. and Ph.D. from the University of Tokyo. After he worked at Mitsubishi Research Institute, Inc. in 1983-1995, he joined Japan Advanced Institute of Science and Technology (JAIST) as an associate professor of School of Information Science in 1995, and a full professor from 2000 to this day. His interest includes formal semantics of natural language, logic of knowledge and belief in agent communication. His recent works concern also the iterated learning of grammar acquisition, as well as grammatical analysis of music.
KICSS 2018 Invited Speaker

Sumate Charoenchaidet

Senior researcher
SCG Chemicals Co., Ltd.
Email: sumatec@scg.com

Recent Research and Development of Polyolefins Technology in SCG-Chemicals

Abstract
SCG-Chemicals has launched Polyolefin business since 1983 in Maptha-phud industrial estate, Rayong province. Now a day, we have expanded to upstream and many various downstream-products, for example, composited materials, PTA, MMA etc. Therefore, our vision has been intensified to Differentiated products and High value added products in the future portfolio. Research and Development program has been established since 2002 as Technology Building Blocks for Process technology and Polyolefin catalysis, Polymer Structure and Processing in 2006 and Compounding technology in 2007. Our R&D mission is to strengthen SCG Chemicals to be market leader in South-East of Asia.

Recently, we have provided premium pipe applications, ROTO molding, polyolefin wax, excellent packaging etc. to the market by in-house R&D task forces. We are thriving to create new and sustainable competitive advantages by delivering innovations that matters most to the business and leveraging the uses of IP, knowing why we are here
and what do we need to be specialized. Finally, we would be appreciative to invite specialists and researches from around the world to join in to create value together. As SCG’s current promising is “Passion for Better” for challenging to change and offer better solution.

**Keywords**: Polyolefin, Process technology, Polyolefin catalysis, ROTO molding, Polyolefin wax, Excellent packaging

**Bibliography**
Dr. Sumate Charoenchaidet received B.Sc., M.Sc. and Ph.D. from the Chulalongkorn University in 1995, 1997 and 2002, respectively. He also got his Ph.D. degree, as a dual degree, from the University of Michigan, Ann Arbor, USA. After he worked at Thai Polyethylene for eleven years as catalyst researcher, manager and Senior research in 2002-2013, he joined SCG Chemicals Co., Ltd as a senior researcher and the group head of polyolefin central research. His interest includes borate co-catalyst, ethylene polymerization and copolymerization.
Applications of Artificial intelligence in Petrochemical business of SCG Chemical

Abstract
SCG Chemicals is one of the oldest petrochemical company in Thailand originated back in 1983. The company have evolved to be one of the leader of polyolefin producer in South East Asia, having production complex located in Thailand, Indonesia, and Vietnam. In order to do so, the company have embraced power of computer aid engineering, data management, and digital manufacturing on improving the way of work. In this talk I will introduce example on variety of application of artificial intelligence in SCG Chemicals’ business.and what do we need to be specialized. Finally, we would be appreciative to invite specialists and researches from around the world to join in to create value together. As SCG’s current promising is “Passion for Better” for challenging to change and offer better solution.

Keywords: Polyolefin, Process technology, Polyolefin catalysis, ROTO molding, Polyolefin wax, Excellent packaging
Bibliography
Dr. Arkom Drawpateep received B.Sc. from King Mongkut’s Institute of Technology Ladkrabang (KMITL), Thailand in 2007. He received M.Sc. degree in Applied Polymer Science, Major of Polymer Engineering from Martin-Luther-Universitat Halle-Wittenberg, Germany in 2011. He is awarded a Ph.D. degree from Martin Luther University, Halle, Germany in 2018. He joins the SCG Chemicals from 2011. He is now the lead engineer of the PP Technology group, SCG Chemicals. His interest includes borate co-catalyst, ethylene polymerization and copolymerization.
Guest Speaker

Minh Le Nguyen

Associate Professor
School of Information Science,
Japan Advanced Institute of Science and Technology (JAIST)
Email: nguyenml@jaist.ac.jp

Natural Language Processing for
Legal Engineering and its Application

Abstract
Our society is regulated by a lot of laws which are related mutually. When a society is viewed as a system, laws can be viewed as the specifications for the society. In the upcoming e-Society, laws have more important roles for achieving a trustworthy society and we expect a methodology which treats a system-oriented aspect of laws. Legal Engineering is the field that studies the methodology and applies information science, software engineering and artificial intelligence to laws for supporting legislation and to implement laws using computers. As laws are written in natural language, natural language processing is essential for Legal Engineering. In this talk, we present our works on natural language processing for Legal Engineering. We also highlight our current deep learning-based techniques for analyzing legal documents and our system participating on the Fifth Competition on Legal Information Extraction/Entailment (COLIEE-2018).

Keywords: Legal text processing, Legal engineering, Deep learning, Natural Language Processing.
Bibliography
Minh Le Nguyen is currently an Associate Professor of School of Information Science, JAIST. He leads the lab on Machine Learning and Natural language Understanding at JAIST. He received his B.Sc. degree in information technology from Hanoi University of Science, and M.Sc. degree in information technology from Vietnam National University, Hanoi in 1998 and 2001, respectively. He received his Ph.D. degree in Information Science from School of Information Science, Japan Advanced Institute of Science and Technology (JAIST) in 2004. He was an assistant professor at School of information science, JAIST from 2008-2013. His research interests include machine learning, natural language understanding, question answering, text summarization, machine translation, legal text processing, and Deep Learning.
# Conference Overall Schedule (Day 0)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:30-18:30</td>
<td>Registration</td>
</tr>
<tr>
<td>18:30-21:00</td>
<td>Welcome Reception at Beach Bar</td>
</tr>
</tbody>
</table>
## Conference Overall Schedule (Day 1)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>08:00-09:00</strong></td>
<td>Registration</td>
</tr>
<tr>
<td><strong>09:00-09:50</strong></td>
<td><strong>Opening Ceremony at Infinity Ballroom</strong> [09:00-09:15]</td>
</tr>
<tr>
<td></td>
<td><strong>Keynote Speech I (KICSS 2018)</strong> [09:15-09:50]</td>
</tr>
<tr>
<td></td>
<td>Music and AI</td>
</tr>
<tr>
<td></td>
<td>Satoshi Tojo</td>
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<tr>
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<td>(Room: Inifiny Ballroom, SC: Thanaruk Theeramunkong)</td>
</tr>
<tr>
<td><strong>09:50-10:15</strong></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td><strong>10:15-12:00</strong></td>
<td><strong>Session K01</strong> <em>(Susumu Kunifujii)</em></td>
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<tr>
<td></td>
<td><strong>Session I01</strong> <em>(Track 1)</em></td>
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<tr>
<td></td>
<td><em>(Rachada Kogkachandra)</em></td>
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<tr>
<td></td>
<td><strong>Session I02</strong> <em>(Track 3)</em></td>
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<tr>
<td></td>
<td><em>(Marut Buranarach)</em></td>
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<tr>
<td><strong>12:00-13:30</strong></td>
<td><strong>Lunch at The Beach Club Restaurant</strong></td>
</tr>
<tr>
<td><strong>13:30-14:45</strong></td>
<td><strong>Keynote Speech II (iSAI-NLP 2018)</strong> [13:30-14:20]</td>
</tr>
<tr>
<td></td>
<td>Learning with Arbitrary Class Drift in Streaming Data and Applications</td>
</tr>
<tr>
<td></td>
<td>Chidchanok Lursinsap</td>
</tr>
<tr>
<td></td>
<td>(Room: Infinity Ballroom, SC: Thepchai Supnithi)</td>
</tr>
<tr>
<td></td>
<td><strong>Guest Speech I (KICSS 2018)</strong> [14:20-14:45]</td>
</tr>
<tr>
<td></td>
<td>Applications of Artificial intelligence in Petrochemical business of SCG Chemical</td>
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<tr>
<td></td>
<td>Arkom Drawpateep</td>
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<tr>
<td></td>
<td>(Room: Infinity Ballroom, SC: Thepchai Supnithi)</td>
</tr>
<tr>
<td><strong>14:45-15:15</strong></td>
<td><strong>Coffee Break</strong></td>
</tr>
<tr>
<td><strong>15:15-17:00</strong></td>
<td><strong>Session K02</strong> <em>(Yukari Nagai)</em></td>
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<tr>
<td></td>
<td><strong>Session I03</strong> <em>(Track 2)</em></td>
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<tr>
<td></td>
<td><em>(Sumeth Yuenyong)</em></td>
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<tr>
<td></td>
<td><strong>Session I04</strong> <em>(Track 4)</em></td>
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<tr>
<td></td>
<td><em>(Pokpong Songmuang)</em></td>
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</tbody>
</table>
## Conference Overall Schedule (Day 2)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>08:00-09:00</td>
<td>Registration</td>
</tr>
<tr>
<td>09:00-09:50</td>
<td><strong>Keynote Speech III (iSAI-NLP/KICSS 2018) [09:00-09:50]</strong>&lt;br&gt;Representation learning with trainable COSFIRE filters&lt;br&gt;<em>Nicolai Petkov</em>&lt;br&gt;(Room: Infinity Ballroom, SC: Narumol Chumuang)</td>
</tr>
<tr>
<td>09:50-10:15</td>
<td>Break</td>
</tr>
<tr>
<td>10:15-12:00</td>
<td><strong>Session K03</strong>&lt;br&gt;&lt;br&gt;<em>Takayuki Ito</em>&lt;br&gt;&lt;br&gt;<strong>Session I05</strong>&lt;br&gt;&lt;br&gt;<em>Prachya Boonkwa and Kanyalag Phodong</em>&lt;br&gt;&lt;br&gt;<strong>Session K05</strong>&lt;br&gt;&lt;br&gt;<em>Mikifumi Shikida</em>&lt;br&gt;&lt;br&gt;<strong>Session I06</strong>&lt;br&gt;&lt;br&gt;<em>Hidekazu Yanagimoto</em>&lt;br&gt;&lt;br&gt;<strong>Session I08</strong>&lt;br&gt;&lt;br&gt;<em>Nicolai Petkov and Katsuhide Fujita</em></td>
</tr>
<tr>
<td>12:00-13:30</td>
<td>Lunch at The Beach Club Restaurant</td>
</tr>
<tr>
<td>13:30-14:45</td>
<td><strong>Keynote Speech IV (KICSS 2018) [13:30-14:10]</strong>&lt;br&gt;Recent Research and Development of Polyolefins Technology in SCG-Chemicals&lt;br&gt;<em>Sumate Charoenchaidet</em>&lt;br&gt;(Room: Infinity Ballroom, SC: Minoru Terano)&lt;br&gt;&lt;br&gt;<strong>Guest Speech II (iSAI-NLP 2018) [14:10-14:35]</strong>&lt;br&gt;Natural Language Processing for Legal Engineering and its Application&lt;br&gt;<em>Le Minh Nguyen</em>&lt;br&gt;(Room: Infinity Ballroom, SC: Marut Buranarach)</td>
</tr>
<tr>
<td>14:45-15:10</td>
<td>Break</td>
</tr>
<tr>
<td>15:10-17:00</td>
<td><strong>Session K04</strong>&lt;br&gt;&lt;br&gt;<em>Thanaruk Theeramunkong</em>&lt;br&gt;&lt;br&gt;<strong>Session I07</strong>&lt;br&gt;&lt;br&gt;<em>Sakorn Mekruksavanich</em>&lt;br&gt;&lt;br&gt;(Track 4)&lt;br&gt;&lt;br&gt;<strong>Session I08</strong>&lt;br&gt;&lt;br&gt;<em>Nicolai Petkov and Katsuhide Fujita</em>&lt;br&gt;&lt;br&gt;(Track 3)</td>
</tr>
<tr>
<td>18:30-21:00</td>
<td>Banquet at Bua Sawan Room</td>
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</tbody>
</table>
# Conference Overall Schedule (Day 3)

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Registration</th>
<th>Session K06</th>
<th>Gemini 1</th>
<th>Gemini 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>08:00-09:00</strong></td>
<td>Infinity Ballroom</td>
<td>Registration</td>
<td>iSAI-NLP Tutorial 1 (T01) (Chatbot)</td>
<td>iSAI-NLP Tutorial 2 (T02) (Data Analytics)</td>
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<tr>
<td><strong>09:00-10:00</strong></td>
<td>Infinity Ballroom</td>
<td>Session K06</td>
<td>iSAI-NLP Tutorial 1 (T01) (Chatbot)</td>
<td>iSAI-NLP Tutorial 2 (T02) (Data Analytics)</td>
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<tr>
<td><strong>10:00-10:30</strong></td>
<td>Infinity Ballroom</td>
<td>Break</td>
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<tr>
<td><strong>10:30-12:00</strong></td>
<td>Infinity Ballroom</td>
<td>Session K07</td>
<td>iSAI-NLP Tutorial 1 (T01) (Chatbot)</td>
<td>iSAI-NLP Tutorial 2 (T02) (Data Analytics)</td>
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<tr>
<td><strong>12:00-13:30</strong></td>
<td>Infinity Ballroom</td>
<td>Lunch at The Beach Club Restaurant</td>
<td>iSAI-NLP Tutorial 1 (T01) (Chatbot)</td>
<td>iSAI-NLP Tutorial 2 (T02) (Data Analytics)</td>
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</tr>
<tr>
<td><strong>13:30-14:45</strong></td>
<td>Thai Track</td>
<td>iSAI-NLP Tutorial 1 (T01) (Chatbot)</td>
<td>iSAI-NLP Tutorial 2 (T02) (Data Analytics)</td>
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<tr>
<td><strong>14:45-15:15</strong></td>
<td>Thai Track</td>
<td>Break</td>
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<tr>
<td><strong>15:15-18:30</strong></td>
<td>Thai Track</td>
<td>Thai Track</td>
<td>iSAI-NLP Tutorial 1 (T01) (Chatbot)</td>
<td>iSAI-NLP Tutorial 2 (T02) (Data Analytics)</td>
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</tr>
</tbody>
</table>

**iSAI-NLP/ KICSS 2018 Excursion**
Detailed Schedule
DAY 0            WEDNESDAY, NOVEMBER 14

Main Session [Day 1 - AM] [16:30-18:30]
Registration

[18:30-21:00] Welcome Reception at Beach Bar
DAY 1 - AM (1)    THURSDAY, NOVEMBER 15

Main Session [Day 1 - AM]
[08:00-09:00]
Registration
[09:00-09:15]
Opening Ceremony at Infinity Ballroom
[09:15-09:50]
[KICSS 2018] Keynote Speech I at Infinity Ballroom: Satoshi Tojo, Music and AI
Session Chair: Thanaruk Theeramunkong
[10:00-10:15]
Coffee Break
Day 1 - AM (2)  Thursday, November 15

Session K01 [Day 1 - AM]  Infinity Ballroom

Session Chair: Susumu Kunifuji

[10:15-10:35]
Realization of Organic and Dynamic Creativity Support Tool for Promoting Ethical AI Design (161L)
Kaira Sekiguchi and Koichi Hori

[10:35-10:50]
FaGoN: Fake News Detection model using Grammatic Transformation on Neural Network (137R)
Youngkyung Seo and Chang-Sung Jeong

[10:50-11:05]
Participatory Event Type MONO-ZUKURI Education Effectiveness for Future Creativity (165R)
Tomomi Kaneko, Mitsuru Kato, Daisuke Iwama, and Akihiro Kido

[11:05-11:20]
A Method for Supporting Medical-interview Training using Smart Devices (172R)
Mikifumi Shikida, Yuki Kodera, Shunya Inoue, and Kunimasa Yagi

Computational Thinking for Elementary School in Japan and Art Thinking (171S)
Akio Shimogoori, Minatsu Ariga, and Yukari Nagai

Developing Innovation Skills in Second Language Education-Cultivation of Creativity and Intercultural Communicative Competence (140S)
Ting Liu and Takaya Yuizono

[11:44-12:04]
A Development of a Personalised Web from Rice Knowledge Content-based Website using Ontology (170L)
Taneth Ruangrjitpakorn, Charun Phrombut, and Thepchai Supnithi
Session I01 (Track 1) [Day 1 - AM]  

**Gemini 1**

**Session Chair: Rachada Kogkachandra**

[10:15-10:35]  
*Classification of Tweets Related to Illegal Activities in Thai Language (54L)*  
Sumeth Yuenyong, Narit Hnoohom, Konlakorn Wongpatikaseree, and Teerapong Pheungbun na ayutthaya

[10:35-10:55]  
*Semantic similarity measure for Thai language (5L)*  
Papis Wongchaisuwat

[10:55-11:15]  
*A Supporting Tool for Learning to Improve Thinking Skill through Reading Activities (66L)*  
Wasan Na Chai, Taneth Ruangrafajitpakorn, and Thepchai Supnithi

[11:15-11:35]  
*An Efficient Manifold Ranking Approach for Monolithic Graphs and Semantic Networks (10L)*  
Prachya Boonkwan, Dhanon Leenoi, Thepchai Supnithi, and Akkharawoot Takhom
DAY 1 - AM (4)    THURSDAY, NOVEMBER 15

Session I02 (Track 3) [Day 1 - AM]  Gemini 2

Session Chair: Marut Buranarach

[10:15-10:35]  
Quality Classification of ASEAN Wikipedia Articles using Statistical Features (51L)
Kanchana Saengthongpattana, Thepchai Supnithi, and Nuanwan Soonthornphisaj

[10:35-10:55]  
Exploring Efficiency of Data Mining Techniques for Missing Link in Online Social Network (33L)
Chainarong Sirisup and Pokpong Songmuang

[10:55-11:15]  
Modeling for Robot-Driven Prototype Automation (40L)
Manussawee Piyaneeranart and Mahasak Ketcham

[11:15-11:35]  
The Limb Leads ECG Signal Analysis in Inferior Myocardial Infarction Patients by Rule Base (49L)
Anchana Muankid and Mahasak Ketcham

Semantic-based Relationship between Objective Interestingness Measures in Association Rules Mining (53L)
Rachasak Somyanonthanakul, Monnapat Roonsamrarn, and Thanaruk Theeramun-kong
Main Session [Day 1 - PM]
[12:00-13:30]
Lunch at The Beach Club Restaurant

[13:30-14:20]
[iSAI-NLP 2018] Keynote Speech II at Infinity Ballroom: Chidchanok Lursinsap, Learning with Arbitrary Class Drift in Streaming Data and Applications
Session Chair: Thepchai Supnithi

[14:20-14:45]
[KICSS 2018] Guest Speech I at Infinity Ballroom: Arkom Drawpateep, Applications of Artificial intelligence in Petrochemical business of SCG Chemical
Session Chair: Thepchai Supnithi

[14:45-15:15]
Coffee Break
Session K02 [Day 1 - PM]  

Session Chair: Yukari Nagai

[15:15-15:35]
Named Entity Sentiment Classifications using Peripheral Words and Dependencies in Online Discussions (146L)
Tomohiro Ando and Katsuhide Fujita

[15:35-15:55]
Constrained Clustering with Seeds and Term Weighting Scheme (150L)
Uraiwan Buatoom, Waree Kongprawechnon, and Thanaruk Theeramunkong

[15:55-16:15]
Speaker Choice Method based on Multi-armed Bandit Algorithm for Online Discussions (132L)
Mio Kurii and Katsuhide Fujita

[16:15-16:35]
Comment Evaluation by Combining Comment and Word Mutual Evaluation Method and LSTM Evaluation Method in Lecture Questionnaire (145L)
Nobuyuki Kobayashi, Hiromitsu Shiina, and Takafumi Otani

[16:35-16:47]
Handsfree Interactive Music Game Development with Motion Sensing Technology (149S)
Peeraphon Kulthamyothin, Panuwat Huachai, Nopporn Chotikakamthorn, and Samart Moodleah

[16:47-16:59]
Generating GIF from 3D Mesh and Point Cloud: An Automated Software (148S)
Samart Moodleah, Pornsuree Jamsri, and Waqar Shahid

[16:59-17:11]
Exploring Effective Management Style for Creative Workers with Effect Size Analysis (166S)
Rihyei Kang and Hiro Higashide
Session I03 (Track 2) [Day 1 - PM]

Session Chair: Sumeth Yuenyong

[15:15-15:35]
Prediction of Dissolved Oxygen Concentration for Shrimp Farming using Quadratic Regression and Artificial Neural Network (19L)
Kasorn Galajit, Pitisit Dillon, Suradej Duangpummet, Jakkaphob Intha, Prachumppong Dangsakul, Khongpan Rungprateepthaworn, Rachaporn Keinprasit, and Jessada Karnjana

[15:35-15:50]
SAFLOOR: Smart Fall Detection System for the Elderly (23R)
Pasit Tangkongchitr, Mingkamon Buathang, Thanavit Unsuwan, and Konlakorn Wongpatikaseree

[15:50-16:05]
Open Traffic Data Exchange and Collaborative Platform (3R)
Jatuporn Chintrungrueng, La-or Kovavisaruch, Lalita Narupiyakul, and Konlakorn Wongpatikaseree

[16:05-16:20]
Determining Physical Location of Wireless Access Point using Smart Devices (17R)
Vasin Suttichaya, Ting-Wei Liang, and Nannapat Meemongkolkiat

[16:20-16:35]
An Analyze Movement Path of Employees in Fire Drill by Indoor Location System using Bluetooth (30R)
Anuwat Chaiwongyen, Laor Kovavisaruch, Taweesak Sanpechuda, Krisada Chinda, Sodsai Wisadsud, Thitipong Wongsatho, and Kamol Kaemarungsri

[16:35-16:50]
A Study on Applying an Autoregressive Model with the Kalman Filtering in Accuracy Improvement of Dissolved Oxygen Measurement (26R)
Asadang Tanatipuknon and Jessada Karnjana
DAY 1 - PM (4)    THURSDAY, NOVEMBER 15

Session I04 (Track 4) [Day 1 - PM]    Gemini 2

Session Chair: Pokpong Songmuang

[15:15-15:35]
MEDiDEN: Automatic Medicine Identification using a Deep Convolutional Neural Network [24L]
Narit Hnoohom, Sumeth Yuenyong, and Pitchaya Chotivatunyu

[15:35-15:55]
Speech Watermarking Technique based on Singular Spectrum Analysis and Automatic Parameter Estimation using Differential Evolution for Tampering Detection (41L)
Kasorn Galajit, Mongkonchai Intarauksorn, Jessada Karnjana, Pakinee Aimmanee, Masashi Unoki

[15:55-16:10]
Blind, SVD-based Scheme for Information Hiding in Digital Images (48R)
Kittikom Sangrit, Tidanat Kumpuak, Suthum Keerativittayanun, and Jessada Karnjana

[16:10-16:25]
3D Foreground Point Segmentation from Background using Centroid-based Min-Cut Method (60R)
Cho Cherry Aung and Thin Lai Lai Thein

[16:25-16:40]
Accuracy Improvement of a Province Name Recognition on Thai License Plate (11R)
Somkheart Kraisin and Natsuda Kaothanthong

[16:40-16:55]
Machine Learning Methods for Assessing Freshness in Hydroponic Produce (44R)
Konlakorn Wongpatikasereet, Narit Hnoohom, and Sumeth Yuenyong

[16:55-17:10]
Applied Artificial Optimization Algorithm in Design Flaws Detection (64R)
Sakorn Mekruksavanich

[17:10-17:25]
Visual Big Data Analytics for Sustainable Agricultural Development (63R)
Sakorn Mekruksavanich and Thitirath Cheosuwan
Main Session [Day 2 - AM]
[08:00-09:00]
Registration
[09:00-09:50]
[iSAI-NLP/KICSS 2018] Keynote Speech III at Infinity Ballroom: Nicolai Petkov, Representation learning with trainable COSFIRE filters
Session Chair: Narumol Chumuang
[09:50-10:15]
Coffee Break
Session K03 [Day 2 - AM]

Infinity Ballroom

Session Chair: Takayuki Ito

[10:15-10:35]
Proposal and Evaluation of Contribution Value Model for Creation Support System (123L)
Yoshiharu Kato, Tomonori Hashiyama, and Shun’ichi Tano

[10:35-10:55]
Analysis of Aging Population on Consumption Structure: Creativity in Effective Industry Supply (135L)
Shu Yu, Takaya Yuizono, and Liangliang Ma

[10:55-11:15]
A Study of Lexical Ambiguity in Large Forum Discussions for Multidisciplinary Knowledge Engineering (147L)
Akkharawoot Takhom, Prachya Boonkwan, H. Ulrich Hoppe, Mitsuru Ikeda, Sasiporn Usanavasasin, and Thepchai Supnithi

[11:15-11:35]
Weather Scenario Generation Game (154L)
Bipul Neupane, Nguyen Duy Hung, Teerayut Horanont

Improving Plant Recognition using Hybrid features from Connectionist and Knowledge-Based Approaches (163L)
Benjaphan Sommana and Thanaruk Theeramunkong

[11:55-12:10]
Intermodal network design in freight transportation systems (125R)
Tran Quynh Le, Suchada Rianmora, and Panitan Kewcharoenwong
DAY 2 - AM (3) FRIDAY, NOVEMBER 16

Session I05 (Track 1) [Day 2 - AM] Gemini 1

Session Chair: Prachya Boonkwan and Kanyalag Phodong

[10:15-10:30]
Siamese LSTM with Convolutional Similarity for Similar Question Retrieval (36R)
Avinash Kamineni, Harish Yenala, Manish Shrivastava, and Manoj Chinnakotla

[10:30-10:45]
A Preliminary Study on Fundamental Thai NLP Tasks for User-generated Web Content (14R)
Anuruth Lertpiya, Teerapat Chaiwachirasak, Nattasit Maharattanamalai, Theerapat Lapjaturapit, Tawunrat Chalothorn, Nutcha Tirasaroj, and Ekapol Chuangsuwanich

[10:45-11:00]
Sentiment Classification with Gated CNN for Customer Reviews (42R)
Makoto Okada, Hidekazu Yanagimoto, and Kiyota Hashimoto

[11:00-11:15]
Text Normalization on Thai Twitter Messages using IPA Similarity Algorithm (45R)
Sanphet Poolsukkho and Rachada Kongkachandra

[11:15-11:30]
YouTube AV 50K: An Annotated Corpus for Comments in Autonomous Vehicles (8R)
Tao Li, Lei Lin, Minsoo Choi, Kaiming Fu, Siyuan Gong, and Jian Wang

[11:30-11:45]
Thai Sentiment Analysis via Bidirectional LSTM-CNN Model with Embedding Vectors and Sentic Feature (69R)
Thititorn Seneewong Na Ayutthaya and Kitsuchart Pasupa

[11:45-12:00]
Extractive Summarization for Myanmar Language (35R)
Soe Soe Lwin and Khin Thandar Nwet
DAY 2 - AM (4)  FRIDAY, NOVEMBER 16

Session K05 [Day 2 - AM]  Gemini 2
Session Chair: Mikifumi Shikida
[10:15-10:27]
Emotion Classification using Brainwave (157S)
Wichaya Wichienchai, Puwis Thiparpakul, and Pokpong Songmuang
[10:27-10:39]
Revealing the important features of mobile phishing (160S)
San Kyaw Zaw and Sangsuree Vasupongayya
[10:39-10:51]
Designing a Soft-skill Cultivation Platform for Health Care Professionals (HCPs): A Study of BRAC’s Community Health Workers (CHW) of Bangladesh (129S)
Safinoor Sagorika and Shinobu Hasegawa

Session I06 (Track 3) [Day 2 - AM]  Gemini 2
Session Chair: Hidekazu Yanagimoto
[11:00-11:15]
Model for Handwritten Recognition based on Artificial Intelligence (55R)
Narumol Chumuang, Mahasak Ketcham
[11:15-11:30]
Activity Recognition using Kinect and Comparison of Supervised Learning Models for Activity Classification (34R)
Tanakon Sawanglok, Tananya Thampairoj, and Pokpong Songmuang
[11:30-11:42]
The Study of Factors and Model Creation for Predicting Academic Achievement using Support Vector Machine (46S)
Thidarat Pinthong, Worawut Yimyam, and Mahasak Ketcham

Session I06 (Track 2) [Day 2 - AM]  Gemini 2
Session Chair: Konlakorn Wongpatikasereen
[11:50-12:05]
Indoor Positioning Estimation using BLE Beacons (32R)
Hidekazu Yanagaimoto, Kiyota Hashimotom, and Tokuo Matsuo
[12:05-12:20]
Comparative Assessment of Indoor Positioning Technologies, Techniques, and Algorithms (47R)
Lhakpa Dorji and Teerayut Horanont
DAY 2 - AM (5)  FRIDAY, NOVEMBER 16

Poster Session

[10:30-17:00]
*Particularly, during the break, 10:00-10:30, 14:45-15:15, and 17:00-18:00

KICSS 2018 Poster
A New Dimension for Smart Cities, Driven by an Economic and Localization perspective (155P)
Mode Vasuaninchita, Varin Vongmanee, and Wanchai Rattanawong
A collaborative active learning method for chance discovery and a virtual coordinator of relaxing travels plan with attractive experiences (138P)
Taizo Miyachi and Takashi Furuhata

iSAI-NLP 2018 Poster
A Lexicographic Management System towards Linguistic Metacognition Tracking (20P)
Sawittree Jumpathong, Kanyanut Kriengket, Prachya Boonkwan, Nattapol kristsuthikul, and Thepchai Supnithi
Social Media Account Extraction for Thai Celebrities (21P)
Jian Qu, Nattakarn Phaphoom, and Chinorot Wangtragulsang
DAY 2 - PM (1)       FRIDAY, NOVEMBER 16

Main Session [Day 2 - PM]
[12:00-13:30]
Lunch at The Beach Club Restaurant
[13:30-14:10]
[KICSS 2018] Keynote Speech IV at Infinity Ballroom: Sumate Charoenchaidet, Recent Research and Development of Polyolefins Technology in SCG-Chemicals
Session Chair: Minoru Terano
[14:10-14:35]
[iSAI-NLP 2018] Guest Speech II at Infinity Ballroom: Le Minh Nguyen, Natural Language Processing for Legal Engineering and its Application
Session Chair: Marut Buranarach
[14:35-15:10]
Coffee Break

[18:30-21:00]
Banquet at Bua Sawan Room
Session K04 [Day 2 - PM]  
**Infinity Ballroom**

*Session Chair: Thanaruk Theeramunkong*

[15:10-15:25]
**The Effect of the Semantics of Diseases to Prevention Management Fees by using Propensity Score Matching (139R)**  
Ryosuke Matsuo and Kenji Araki

[15:25-15:40]
**Research on Museum Lighting Design Method: Emotional Effects based on the SVOE Model and Creative Thinking (141R)**  
Zhisheng Wang, Yukari Nagai, Nianyu Zou, Ting Liu, Zhi Sun, and Jiahui Liu

[15:40-15:55]
**Finding Grammar in Music by Evolutionary Linguistics (142R)**  
Hiroki Sudo, Masaya Taniguchi, and Satoshi Tojo

[15:55-16:10]
**A Method for Online Discussion Design and Discussion Data Analysis (167R)**  
Naoko Yamaguchi, Takayuki Ito, and Tomohiro Nishida

[16:10-16:25]
**A Case-based Reasoning Approach for Automated Facilitation in Online Discussion Systems (169R)**  
Wen Gu, Ahmed Moustafa, Takayuki Ito, Minjie Zhang, and Chunsheng Yang

[16:25-16:37]
**Automatic Generating UML Use Case Diagram and Test Cases based on Classification Tree Method (159S)**  
Wassana Naiyapo and Atichat Sangtong

[16:37-16:49]
**Design and Implementation of Group Work Monitoring System for Exploring Creativity (158S)**  
Atsuo Yoshitaka and Anh Minh Truong

[16:49-17:01]
**Effect of Auto-complete Function on Processing Web IDE for Novice Programmers (121S)**  
Motoki Miura
DAY 2 - PM (3) 
FRIDAY, NOVEMBER 16

Session I07 (Track 4) [Day 2 - PM] 
Gemini 1

Session Chair: Sakorn Mekruksavanich

[15:10-15:25]
Cross-modal Correlation Analysis between Vowel Sounds and Color* (27R)
Win Thuzar Kyaw, Atsuya Suzuki, and Yoshinori Sagisaka

[15:25-15:40]
Analysis of communicative phrase prosody based on linguistic modalities of constituent words (7R)
Kazuma Takada, Hideharu Nakajima, and Yoshinori Sagisaka

[15:40-15:55]
Classification of Terrain Types in Unmanned Aerial Vehicle Images (22R)
Inon Wiratsin, Veerapong Suchaiporn, Pojchara Trainorapong, Jirachaipat Chaichinvara, Sakwaroon Rattanajitdamrong, and Narit Hnoohom

Session I07 (Track 1) [Day 2 - PM] 
Gemini 1

Session Chair: Yoshinori Sakisaga

[16:00-16:15]
Chatbot: An automated conversation system for the educational domain (15R)
Anupam Mondal, Monalisa Dey, Dipankar Das, Sachit Nagpal, and Kevin Garda

[16:15-16:30]
The estimation of stability of semantic space generated by word embedding algorithms (25R)
Amirzhan Sanzhar, Alexander Pak, and Jaxylykova Assel Bulatovna

[16:30-16:45]
Keyphrase Extraction as Topic Identification using Term Frequency and Synonymous Term Grouping (43R)
Kwanrutai Nokkaew and Rachada Kongkachandra
DAY 2 - PM (4) FRIDAY, NOVEMBER 16

Session I08 (Track 3) [Day 2 - PM] Gemini 2
Session Chair: Nicolai Petkov and Katsuhide Fujita

[15:10-15:30]
Predicting learning organization factors that affect performance by data mining techniques (70L)
Wiwit Suksangaram, Waratta Hemtong, and Sopaporn Klamsakul

[15:30-15:50]
A Comparative Study of Classification Liver Dysfunction with Machine Learning (71L)
Sattarpoom Thaiparnit, Narumol Chumuang, and Mahasak Ketcham

[15:50-16:10]
Estimation of Spectral Abundance Fractions using Fixed Acceleration Coefficients PSO Approach (16L)
Vaibhav Lodhi, Debashish Chakravarty, and Pabitra Mitra

[16:10-16:30]
Simplicity of Positive Reviews and Diversity of Negative Reviews in Hotel Reputation (50L)
Sachio Hirokawa, Kiyota Hashimoto

[16:30-16:45]
Comparison of Machine Learning Algorithm’s Performance based on Decision making in Autonomous Car (31R)
Ittikon Thammachantuek, Somkiat Kosolsomnbat, and Mahasak Ketcham

[16:45-17:00]
Machine Learning Classifications of Coronary Artery Disease (18R)
Ali Bou Nassif, Omar Mahdi, Qassim Nasir, Manar Abu Talib, and Mohammad Azzeh

[17:00-17:20]
Text-clustering Based Deep Neural Network for Prediction of Occupational Accident Risk: A Case Study (2L)
Sobhan Sarkar, Vaibhav Lodhi, and J. Maiti
DAY 3 - AM (1)       SATURDAY, NOVEMBER 17

Main Session [Day 3 - AM]
[08:00-09:00]
Registration
DAY 3 - AM (2) SATURDAY, NOVEMBER 17

Session K06 [Day 3 - AM]  Infinity Ballroom
Session Chair: Kiyota Hashimoto

[08:30-08:45]
A Study of the Relationship between Color Combinations Preferences of Consumer and their Sports Lifestyle based on AIO Lifestyle Scale (164R)
Lin Fu and Yukari Nagai

[08:45-09:05]
Jupiter: An Automated Negotiation Environment for Supporting Agents that Use Machine Learning (173L)
Tomoya Fukui, Ahmed Moustafa, and Takayuki Ito

[09:05-09:20]
Block Sweetie: Learning Web Application Development by Block Arrangement (120R)
Motoki Miura

[09:20-09:35]
The AI Canvas Model for Successful Startup Companies (128R)
Jarot S. Suroso and Aldian Nurcahyo

[09:35-09:50]
A Study on Intellectual Property Strategy based on Technological Trajectory Analysis of IoT related Technology (131R)
Minoru Koide

[09:50-10:05]
Improving Technology for Open Lecture Distance Learning Support Systems (136R)
Satoshi Kadomatsu, Yasuko Nakada, and Yukari Nagai

[10:05-10:20]
The Design of Meta-Strategy that Can Obtain Higher Negotiating Efficiency (174R)
Xun Tang, Ahmed Moustafa, and Takayuki Ito

[10:00-10:30]
Coffee Break
DAY 3 - AM (3)  SATURDAY, NOVEMBER 17

Session T01 [Day 3 - AM]  Gemini 1
[08:30-10:00]  
iSAI-NLP Tutorial 01: Chatbot
[10:00-10:30]  
Coffee Break

Session T02 [Day 3 - AM]  Gemini 2
[08:30-10:00]  
iSAI-NLP Tutorial 02: Data Analytics
[10:00-10:30]  
Coffee Break
Day 3 - AM (4)  Saturday, November 17

Session K07 [Day 3 - AM]  Infinity Ballroom

Session Chair: Motoki Miura

[10:30-10:45]
Study of Intellectual Capital in Japanese Financial and Insurance Industries (130R)
Narumi Nakazato and Youji Kohda

[10:45-11:00]
Toward the Inheritance and Application of Cultural Symbols in Apparel Creativity Design: A Case Study using Seasonal Insects (134R)
Bo Du, Yukari Nagai, and Manqian Wang

[11:00-11:15]
An Automatic System to Detect Exudates in Mobile-Phone Fundus Images for DR Pre-screening (151R)
Varithdhorn Kalpiyapan, Pakinee Aimmanee, Stanislav Makhanov, Sakchai Wong-sakittirak, and Navapol Karnchanaran

[11:15-11:30]
A Quantification Technique of Air Trapping in Lungs using Stepwise Regression and Neural Network from End-inspiratory and End-Expiratory CT-images (153R)
Pikul Vejjanugraha, Kazunori Kotani, Waree Kongprawechnon, Toshiaki Kondo, and Kanokvate Tungpimolrut

[11:30-11:45]
Estimation of Origin-Destination using Mobile Phone Call Data: A Case Study of Greater Dhaka, Bangladesh (162R)
Dinesh Mani Bhandari, Apichon Witayangkurn, Ryosuke Shibasaki, and Md. Mafizur Rahman

[11:45-11:57]
Indonesian Human Profiles of Good Environmental Knowledge (133S)
Jarot S. Suroso, Bagus Sumargo, and Widiatul Mardiyah
DAY 3 - AM (5)    SATURDAY, NOVEMBER 17

Session T01 [Day 3 - AM]  
[10:30-12:00]  
iSAI-NLP Tutorial 01: Chatbot

Session T02 [Day 3 - AM]  
[10:30-12:00]  
iSAI-NLP Tutorial 02: Data Analytics
DAY 3 - PM (1) SATURDAY, NOVEMBER 17

Main Session [Day 3 - PM]
[12:00-13:30]
Lunch at The Beach Club Restaurant

Session Thai Track [Day 3 - PM] Infinity Ballroom
[13:30-14:45]
iSAI-NLP Thai Track

Session T01 [Day 3 - PM] Gemini 1
[13:30-14:45]
iSAI-NLP Tutorial 01: Chatbot

Session T02 [Day 3 - PM] Gemini 2
[13:30-14:45]
iSAI-NLP Tutorial 02: Data Analytics

Excursion
[13:30 onward]
iSAI-NLP/KICSS 2018 Excursion
DAY 3 - PM (2)       SATURDAY, NOVEMBER 17

Main Session [Day 3 - PM]
[14:45-15:15]
Coffee Break

Session Thai Track [Day 3 - PM]       Infinity Ballroom
[15:15-18:30]
iSAI-NLP Thai Track

Session T01 [Day 3 - PM]       Gemini 1
[15:15-18:30]
iSAI-NLP Tutorial 01: Chatbot

Session T02 [Day 3 - PM]       Gemini 2
[15:15-18:30]
iSAI-NLP Tutorial 02: Data Analytics
iSAI-NLP 2018 Abstracts

(Sorted by Paper ID)
Text-clustering Based Deep Neural Network for Prediction of Occupational Accident Risk: A Case Study

Sobhan Sarkar, Vaibhav Lodhi, and J. Maiti
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Abstract. Predicting occupational accident risk using both structured and unstructured (text) data is broadly an unexplored area of research. Unstructured texts, i.e., incident narratives often remain unutilized or under-utilized. Besides the explicit attributes present in the dataset, there exist a large number of hidden attributes in different forms, which are hardly explored by the traditional machine learning algorithms. Therefore, we propose a methodology that utilizes both text-based clustering, namely Expectation Maximization (EM) algorithm for unstructured text analysis and deep neural network (DNN) for prediction of accident risk using the accident data collected from a steel plant in India. EM-based DNN shows the maximum accuracy equal to 83.59% in the prediction of risk while compared to other algorithms, namely single DNN, support vector machine, and random forest. In addition, it is also explored that the use of text data enhances the prediction accuracy in accident analysis.

Keywords: Occupational accident risk, Prediction, Text-based EM clustering, DNN.
Open Traffic Data Exchange and Collaborative Platform

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Abstract. Traffic information is a necessity information for people within a smart city context. Whether we travel by personal cars or public transportations, up-to-date information on traffic situations helps make our travel much more convenient. Thailand is no different from the rest of the world. This is evident that many cities including Bangkok, Chiang Mai, Khon Kaen and Phuket built mobile applications for disseminating their existing transportation data to public. Also, several universities implement mobile applications to give information on campus transportation. However, these implementations are independent and their data cannot be shared or exchanged between them. This paper shows an implementation of an open traffic data exchange that is ongoing between Nectec and Mahidol University. Both Nectec and Mahidol University have their proprietary traffic systems to inform of their transportation. We agree on some sets of simple standards so that collaboration and sharing of information is possible and efficient. It is our intention to make this platform available to all community including R&D and business enterprises.

Keywords: Traffic data exchange, Open traffic data platform.
Semantic Similarity Measure for Thai Language

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Abstract. Assessing the semantic similarity of texts is a fundamental concept which has many applications in natural language processing and related fields. This work presents both word and sentence semantic similarity measures specifically for Thai language. The word similarity measure is based on word embedding vectors, WordNet database and an edit-distance measure. The sentence similarity measure relies on the word similarity measure as a baseline. The proposed measures are compared with existing methods on benchmark datasets.

Keywords: Semantic similarity measure, Thai string similarity, Text mining.
Analysis of Communicative Phrase Prosody based on Linguistic Modalities of Constituent Words

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Abstract. In this paper, phrase prosody is analyzed based on linguistic modalities of constituent words for communicative speech synthesis. Since Japanese final particles and auxiliaries play crucial roles to indicate speaker’s intention and attitudes as modality differences, Japanese phrase sets showing different degree of the speaker’s judgment were employed. Communicative/ reading speech data were compared over 5 kinds of modality of epistemic judgment (uncertainty of what the speaker said) and 8 kinds of modality of evaluative judgment (what the speaker wishes listeners to be). These modality differences were quantified in 6-point Semantic Differential (SD) scales. The corresponding phrase communicative/reading prosody differences were measured by the F0 rising in the phrase final mora. Statistical analysis showed negative correlation value between F0 rising in the phrase final mora and SD about judgment only in communicative prosody but not in reading prosody. These results support the communicative prosody control possibilities from the modality information embedded in constituent words.

Keywords: Communicative speech prosody, Modality, Semantic Differential (SD).
iSAI2018-008

YouTube AV 50K: An Annotated Corpus for Comments in Autonomous Vehicles

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Abstract. With one billion monthly viewers, and millions of users discussing and sharing opinions, comments below YouTube videos are rich sources of data for opinion mining and sentiment analysis. We introduce the YouTube AV 50K dataset, a freely available collection of more than 50,000 YouTube comments and metadata below autonomous vehicle (AV)-related videos. We describe its creation process, its content and data format, and discuss its possible usages. Especially, we do a case study of the first self-driving car fatality to evaluate the dataset, and show how we can use this dataset to better understand public attitudes toward self-driving cars and public reactions to the accident. Future developments of the dataset are also discussed.

Keywords: -
An Efficient Manifold Ranking Approach for Monolithic Graphs and Semantic Networks

Prachya Boonkwan, Dhanon Leenoi, Thepchai Supnithi, and Akkharawoot Takhom
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Abstract. In recent decades, ranking has played a central role in large-scale information retrieval, preference analysis for recommendation systems, and influence analysis on social media. State-of-the-art ranking algorithms, e.g. PageRank, HITS, and their variants, traverse through a large network of connected items and compute their importance (a.k.a. centrality) by considering the incoming and outgoing links of each node. However, since these techniques take into account the centrality as an scalar quantity, it limits our analytical perspective to only one dimension — rank number. In this paper, we introduce an efficient multidimensional ranking approach that offers both node ranking and cluster analysis on any graph-based structure. We demonstrate that our approach is not only compatible with PageRank’s scalar centrality but also manifests multi-dimensional spatial distribution of nodes. Therefore, it offers the possibility to perform cluster analysis on graph-based structures and keyword extraction via manifold centrality.

Keywords: Manifold ranking, Semantic network, Page-Rank Algorithm, Eigenproblem, Cluster analysis.
Accuracy Improvement of a Province Name Recognition on Thai License Plate

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Abstract. License plate recognition is mechanism for extracting information on a license plate and converting to an encoded text. The information on license plate is letters, number, and province’s name. Although, the license plate recognition for Thai has been introduced for more than ten years, it has a low accuracy rate in the province part. This is due to a low resolution of the province, which has approximately 15-18 pixels of the height. This research aims to improve the accuracy of the province name recognition on Thai license plate. The experiments are conducted on images that were captured from the South of Thailand. A two step classification is proposed to improve accuracy. Given an image of a province’s part, it is classified according to the length of the name. Then, the HOG feature is extracted for predicting the province’s name using a classifier. The proposed method achieve 90% accuracy, which is higher than classifying using only Extreme Learning Machine and Decision Tree.

Keywords: OCR, Thai License Plate Recognition, HOG, Extreme Learning Machine.
A Preliminary Study on Fundamental Thai NLP Tasks for User-generated Web Content

Anuruth Lertpiya¹, Teerapat Chaiwachirasak¹, Nattasit Maharattanamalai¹, Theerapat Lapjaturapit¹, Tawunrat Chalothorn¹, Nutcha Tirasaroj¹, and Ekapol Chuangsuwanich²

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Abstract. Existing literature on Thai NLP often focuses on formally written texts with near-perfect spellings and boundaries between words or sentences. Such assumptions, however, do not hold in real-world NLP tasks, especially when dealing with User-generated web content (UGWC). So far, existing NLP research works on actual web data have been limited, making it unclear whether and how existing techniques can be applicable to UGWC. In this paper, several basic Thai NLP algorithms (word segmentation, sentence segmentation, word error detection, word variant detection, name entity recognition) are re-investigated and benchmarked against real-world, practical UGWC data set. The difference in performance between our data set and others are compared as a guidance for future research. Our baseline sentence segmentation on UGWC data set yields an average Fmeasure of 0.77. For name entity recognition and word variant / error detection tasks, our system yields the accuracy of 0.93 and 0.53, respectively.

Keywords: -
Chatbot: An Automated Conversation System for the Educational Domain

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Abstract. Speech and textual information play a crucial role in communicating between humans. An article in ”The New York Times” published that now-a-days the adults are spending more than 8 hours a day on screens of computers or mobiles. So the major communication between humans is conducted through web applications such as WhatsApp, Facebook, and Twitter etc as a form of speech and textual conversation. In the present paper, we have focused on designing a textual communication application namely chatbot in the educational domain. The proposed chatbot assists in answering questions provided by the users. To develop the system, we have employed an ensemble learning method as random forest in the presence of extracted features from our prepared dataset. Besides, the validation system offers an average F-measure 0.870 score on various K-values under random forest for the proposed chatbot. Finally, we have deployed the proposed system in a form of telegram bot.

Keywords: Chatbot, Educational Domain, Question answering, Machine Learning.
Estimation of Spectral Abundance Fractions using Fixed Acceleration Coefficients PSO Approach

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Abstract. The occurrence of mixed pixels is common in hyperspectral data. It is necessary to analyse mixed pixels for classification, detection, discrimination, and quantification. Spectral unmixing is needed for mixed pixel analysis of the hyperspectral data. It includes endmember extraction and abundance estimation of mixed pixels. In this work, fixed acceleration coefficients based PSO approach is applied and analysed for abundance fractions estimation of endmembers in spectral unmixing. Time varying inertia weight strategy and fixed acceleration coefficient values have been used in this approach. For estimation, supervised linear mixing model is considered, following sumto-one and non-negative constraints, respectively. A proposed approach is tested over real hyperspectral data i.e., jasper ridge dataset. The performance metrics of the approach are Average Abundance Error (AAE) and Root Mean Square Error (RMSE). AAE and RMSE values have been noted over different number of iterations. It is observed that result of fixed acceleration coefficients based PSO approach is promising.

Keywords: Hyperspectral Imaging, PSO, Abundance Estimation, LMM.
Determining Physical Location of Wireless Access Point using Smart Devices

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Abstract. Indoor Position System (IPS) is a method for locating objects in an enclosed space. This paper applies the concept of IPS to locate the physical location of wireless access point. The proposed system can be used for locating the suspected access point in the building. The system uses at least three smartphones to form the points in two-dimensional geometry. These smartphones will gather Wi-Fi’s information and send them to the server. Then, trilateration is applied to calculate the distance and the location of the targeted access point. The physical location will then send back to each smartphone. The smartphone can use this position to navigate the user to the targeted access point. The result shows that, in the enclosed space, the error of the proposed method is around 3.5 meters.

Keywords: Indoor Position System, Received Signal Strength Indication, Trilateration.
Machine Learning Classifications of Coronary Artery Disease

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Abstract. Coronary Artery Disease (CAD) is one of the leading causes of death worldwide, and so it is very important to correctly diagnose patients with the disease. For medical diagnosis, machine learning is a useful tool; however features and algorithms must be carefully selected to get accurate classification. To this effect, three feature selection methods have been used on 13 input features from the Cleveland dataset with 297 entries, and 7 were selected. The selected features were used to train three different classifiers, which are SVM, Naïve Bayes and KNN using 10-fold cross-validation. The resulting models evaluated using Accuracy, Recall, Specificity and Precision. It is found that the Naïve Bayes classifier performs the best on this dataset and features, outperforming or matching SVM and KNN in all the four evaluation parameters used and achieving an accuracy of 84%.

Keywords: Coronary artery disease, Machine learning, Classification, Feature selection.
Prediction of Dissolved Oxygen Concentration for Shrimp Farming using Quadratic Regression and Artificial Neural Network

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Abstract. In a quaculture, one of the most critical factors for sustaining life under the water is the dissolved oxygen (DO) since it affects not only the animal survival rate but also the growth rate. Therefore, in smart aquafarming, the DO content should be monitored thoroughly. As a consequence, in practice, many DO sensors are installed in systems, and they contribute markedly to the system cost. This work aims to reduce the cost by replacing some DO sensors with a model that can describe the dynamics of DO content in a specific controlled environment. Thus, we propose two predictive models: one based on the quadratic regression and another based on an artificial neural network. Experimental results show that, under the limitation of the number of data used in the model construction, both models perform equally. Also, both prediction fitted more to observed data when the DO level is low. This finding supports the practical model usage since in practice we more concern with the efficiency of the model in the case of low DO concentration.

Keywords: Dissolved oxygen model, Shrimp farming, Quadratic regression, Neural network.
A Lexicographic Management System towards Linguistic Metacognition Tracking

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Abstract. The process of lexicography is crucial for making a high-standard dictionary. At present, this process is performed manually, resulting in the bottleneck of data preparation, definition authoring, and approval. In this paper, we propose to develop a lexicographic management system for data retrieval and data extraction, as well as towards linguistic metacognition tracking. We found that the number of pending vocabulary is quite high in spite of the supplementary data preparation.

Keywords: Lexicography, Linguistic metacognition, Dictionary compilation, Lexicographic management system, Review status.
Social Media Account Extraction for Thai Celebrities

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Abstract. Encyclopedia-type websites on named entities relied on traditionally manual processes such as data collection, information extraction and database construction due to near-perfect accuracy. However, due to poor scalability, manual processes become more disproportionately time-consuming and error-prone as the data size increases. This study proposes that an automatic information extraction system can be used to assist human users in data collection and database construction. This study proposes that an automatic information extraction system can be used to assist human users in personal social information collection. We tested our method with Thai celebrities, and compared our method with MThai, our method outperform MThai in terms of accuracy. We also found that social media accounts were extremely difficult to authenticate even by humans as Thai celebrities rarely verify their own accounts.

Keywords: Named entity, Personal information extraction, Unstructured data, Social media.
Classification of Terrain Types in Unmanned Aerial Vehicle Images

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Abstract. Classification of terrain images taken from an unmanned aerial vehicle (UAV) is presented in this work. The objective is to classify terrain into 5 types: building, green zone, car park, road and canal. The processing flow consists of stitching sets of 4 images to form large field of view images to covers the area of interest. The stitched images were then divided into grids, and each grid were manually labeled as one of the five terrain types. Feature extraction was performed on each grid, where the features consist of percentage of pixels whose color falls with in certain range in the HSV color space, the mean pixel value of each of the BGR channels separately, the mean pixel value of all the channels together, and the number of contours detected from binary images thresholded by simple thresholding and by Otsu’s method. Three different classifiers were experimented with: k nearest neighbor, decision tree, and extra tree. Two different dataset were used for training the classifiers: raw dataset where the number of each type of grid were imbalanced due to the nature of the terrains in the area of interest, and an augmented dataset where we artificially increased the number of grids by random flips and rotation such that each class has exactly the same number of grids. A total of six stitched images were reserved for the test set. Experiment results show that best accuracy was achieved by extra tree with accuracy of 85.5%. The results also show that augmenting the training data did not improve the performance.

Keywords: Unmanned aerial vehicle, Image processing, Machine learning, Terrain recognition.
SAFLOOR: Smart Fall Detection System for the Elderly

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Abstract. The main reason for hospital admission of elderly people worldwide is falls. The longer one has to stay on the floor due to inability to get up after falling, the more severe the injury can become. Existing fall detection devices that need to be worn on the body is not very useful because the elderly simply forget or do not want to wear them. From this, we have created a fall detection system named “SaFloor” - a soft mat with force sensors embedded inside. SaFloor can be placed in fall-prone areas, such as by the bedside, bathroom, at the bottom of stairs, etc. It can distinguish between a real fall and other impacts such as walking and dropped objects, and send out a notification to a family member or a care giver via Line message when a fall is detected. The experiment consisting of 14 participants with different weights and heights shows that SaFloor has a successful fall detection rate of 88%.

Keywords: Force sensor, Internet of things, Fall detection.
MEDiDEN: Automatic Medicine Identification using a Deep Convolutional Neural Network

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Abstract. This paper presents MEDiDEN: a smart phone application for automatic medicine identification and medication reminders. The main features of MEDiDEN include the classification of medicine packages, a reminder function that can be set in details and integrates with the mobile OS’s notification system, and news feeds for medication-related articles. The most innovative function of the application is medicine classification, which was implemented using the Inception deep-learning architecture. For medicine package classification, the researchers compared the performance of Inception-V3 and Inception-V4 with the data in this work. The two models could identify medicine with 92.75% and 94.85% accuracy, respectively. Even though Inception-V4 provided slightly better results, the researchers selected Inception-V3 as the model for deployment due to its smaller size, which has the ability to speed up inference run time. The server consists of a Python backend used to run the neural network model. The client application is available on the Android platform. Actual use testing showed that the application could correctly

Keywords: Medication error, Image classification, Medicine classification, Medication reminder.
The Estimation of Stability of Semantic Space Generated by Word Embedding Algorithms

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Abstract. Vector representation of words plays a major role in the natural language processing. As a fundamental unit, the vector representation is further used to solve applied problems: text classification, textual entailment, named-entity recognition. In recent times was created several models to produce word embedding vectors which uses different approaches. However, they suffer from accidents while training, such as random initialization of weights, the random order of the examples. Therefore, it is impossible to reproduce the result, and repeated experiments using the same dataset and algorithms lead to various close results. In this work, we presented methods for estimating the ”dissimilarity” of the semantic spaces built by the algorithms of word embeddings and give mathematical intuition about influence of various randomness on the structure of semantic spaces.

Keywords: Embeddings, Semantic, word2vec, Kullback-Leibler divergence, Diffusion distance.
A Study on Applying an Autoregressive Model with the Kalman Filtering in Accuracy Improvement of Dissolved Oxygen Measurement

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Abstract. The dissolved oxygen (DO) measurement plays a crucial role in every automatic aerator-control system for shrimp farming because the DO affects both the animal survival rate and the growth rate. As a consequence, the accuracy degree of the DO sensor matters. The sensor with high accuracy is not economical. Therefore, we propose a framework for accuracy improvement in the DO measurement of the low-cost sensor. The proposed framework is based on the Kalman filtering algorithm in which an autoregressive technique is used to model the state transition. Therefore, it does not require a complex DO dynamic model. Experimental results show that the framework can be used to improve measurement accuracy in most cases. In the best case, our proposed method increases the accuracy by 13.5%. However, the degree of improvement is on a small scale.

Keywords: Kalman filtering algorithm, Autoregressive model, Dissolved oxygen measurement, Shrimp farming.
Abstract. Vowel-color association characteristics have been studied in the field of phonetics and perception. Though it has been reported that selected color categories after listening vowel categories have similar trends in multiple languages, their sentiment correlations have not yet been thoroughly studied from the viewpoint of speech features. We tried to find sentiment association characteristics between color parameters and speech features directly to have better understanding of cross-modal correlations and to find underlying principles for multimodal applications. Vowel samples uttered by 4 male and 3 female speakers were employed to associate colors after listening them by 34 subjects. Statistical analyses showed the advantage of employing RGB color parameters and speech formants directly to conventional color category to vowel category mapping. The selected color distributions in the F1-F2 plane clearly show that the acoustic speech resonance (i.e. F1 and F2) -RGB correlations can more consistently explain their sentiment correlations. Moreover, by incorporating our sentiment association experiment results using formant-synthesized speech, their correlations can be attributed to F1 and F2 rather than vowel categories. We believe that this finding in cross-modal correlations will serve for not only scientific understanding but also further studies and applications using cross-modal information mapping.

Keywords: Speech-color correlation, Cross-modal information expression, Cross-modal perception, Sentiment information.
An Analyze Movement Path of Employees in Fire Drill by Indoor Location System using Bluetooth

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Abstract. Fire drill is a practice of the emergency procedure to be used in case of fire. The key success factor of this practice is evacuation time which start since the fire alarm rang until the last person left the building. Another factor is the evacuation path. The safety regulation requires person inside building to go to the nearest fire exit during the emergency. However, during practice we never know the real evacuation path. Therefore, in this paper, we present indoor location system using Bluetooth to track movement path of employees during fire drill. This system records the path of employee during evacuation and analyzes each employee. The experiment found that there are 40% of all employees who do not go to nearest fire exit according to safety regulation. In addition, 92% of employee who did not got to nearest fire exit are the employee who the starting point is at the back of the building. One observation is that the assembly point is in the front of the building.

Keywords: An Analyze Movement Path in Fire Drill, Indoor Location System, Bluetooth Indoor Location System.
Comparison of Machine Learning Algorithm’s Performance based on Decision making in Autonomous Car

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Abstract. This paper presents the performance comparison of popular supervised learning algorithms: SVM, MLP, CNN, DT, and RF. These algorithms are used for road images recognition. All images are collected by our model car. They are labeled with four different classes: left, right, forward and stop. We use 90% of them for training and use 10% for testing each model. The result shows that, CNN has the best accuracy about 83.45%.

Keywords: Autonomous car, Machine Learning, ML, Model prediction.
Indoor Positioning Estimation using BLE Beacons

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\textbf{Abstract.} In this paper, we propose four unsupervised position estimation strategies from very noisy observations. Moreover, we discuss their performance, applying them to data gathered under a sensor system constructed with common devices. An observed RSSI, which denotes radio wave intensity, is distorted by noises because of multipath fading and obstacles to prevent radio wave communication and nobody knows correct RSSI. Hence, a position estimation strategy should be an unsupervised method and we must introduce some assumptions to an observation generation process. The position estimation strategies have the following assumptions; (1) receivers with too low RSSI are not reliable and (2) human move is enough slow. Using the assumption, we proposed four position estimation strategies with an unsupervised method. We gathered RSSI logs in an international academic conference to discuss the performance of the four strategies. Moreover, we applied the strategies to the logs and estimated positions are discussed from the view point of stability of estimated positions.

\textbf{Keywords:} Indoor detection, Human moves, Proximity-based detection.
Exploring Efficiency of Data Mining Techniques for Missing Link in Online Social Network

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Abstract. Missing link in Online Social Network (OSN) is an interesting problem for capturing missing relation and understanding user’s behavior. The existing work introduced social features for training predictive models, but they used only SVM prediction technique for solving the problem. However, we suspect that other prediction techniques may give better performance. This study investigates prediction performances of SVM, k-NN, Decision Tree, Neural Networks, Naïve Bayes, Logistic Regression and Random Forest using two OSN datasets (high-density and low density). We realize that the Random Forest technique has the best performance with F1-measure score. Moreover, this technique is most robust technique for the both datasets.

Keywords: Missing link, Link prediction, Online social network, Prediction technique.
Activity Recognition using Kinect and Comparison of Supervised Learning Models for Activity Classification

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Abstract. This work presents a method to develop activity recognition using Kinect as a motion-sensing device and supervised learning for classification. Data from Kinect are continuous and independent frame representing in three dimensional axes from 20 human joints. The data then are trained for classify activities using supervised learning algorithms. The activities are 10 basic motion-gestures such as standing, waving, Thai-style greeting and walking. To compare supervised learning for classification in the task, four algorithms including neural networks, naive bayes, decision tree and support vector machine are applied to generate classification models. From experiment results, the best overall classification model was from neural network algorithm at about 75% accuracy while the second best was support vector machine with slightly lower accuracy. From analysis, the most incorrect activities were ‘wai’ (Thai greeting) and ‘walking’ in which were often misinterpreted to their similar activities as ‘bowing’ and ‘running’, respectively.

Keywords: Activity Recognition, Kinect, Motion Detection, Data mining, Classification.
Extractive Summarization for Myanmar Language

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Abstract. Due to increasing availability of online information, tools and mechanisms for automatic summarization of documents is needed. Text summarization is currently a major research topic in Natural Language Processing. There are various approaches to generate text summary. Among them, we proposed Myanmar text summarization using latent semantic analysis (LSA). Latent semantic analysis (LSA) is a technique in natural language processing, and can analyze relationships between a set of documents and the terms they contain by producing a set of concepts related to the documents and terms. It is an unsupervised approach which does not need any training or external knowledge. There is no LSA based sentence extraction in Myanmar language. This is the first LSA based Text Summarizer in Myanmar. This paper present generic, extractive and single-document Myanmar text summarization using latent semantic analysis. This paper compare two sentence selection methods (Steinberger and Jezek's approach and Ozay approach) of latent semantic analysis to extract important sentences. We summarize Myanmar news from Myanmar official websites such as 7day daily, iyarwaddy, etc..

Keywords: LSA, Text summarization.
Siamese LSTM with Convolutional Similarity for Similar Question Retrieval

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Abstract. In this paper, we model the similar question retrieval task as a binary classification problem. We propose a novel approach of “1D-Siamese LSTM for cQA (1D-SLcQA)” to find the semantic similarity between a new question and existing question(s). In 1D-SLcQA, we use a combination of twin LSTM networks and a contrastive loss function to effectively memorize the long term dependencies i.e., capture semantic similarity even when the length of the answers/questions is very large (200 words). The similarity of the questions is modeled using a single network with (1D) (feature) convolution between feature vectors learned from twin LSTM layers. Experiments on large scale real world Yahoo Answers dataset show that 1D-SLcQA outperform the state of the art approach of Siamese cQA approach (SCQA).

Keywords: Community Question Answering, Siamese Network, LSTM, CNN.
Modeling for Robot-Driven Prototype Automation

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Abstract. In the past, researchers have thought that automating robots is a far. Some researchers believe that if a better program is developed with a robot that can automatically move the robot. Nowadays, various researchers have developed robots that can be automated and applied to many tasks. This research has developed an automated robot model. The robot can move in the lane prepared in the laboratory and predict the direction accurately. The movement of the robot is moving in the right lane, representing about 72%.

Keywords: Robot, Autonomous, Vehicle.
Speech Watermarking Technique based on Singular Spectrum Analysis and Automatic Parameter Estimation using Differential Evolution for Tampering Detection

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Abstract. A singular spectrum analysis-based watermarking scheme is proposed to detect speech signal tampering. The watermark is embedded into the original signal by modifying a part of less-significant singular values of the original signal, and later the extracted watermark is compared with the original watermark to detect the tampering. Differential evolution is deployed to select a part of singular spectrum to be modified to balance between the robustness of the scheme and the sound quality of the watermarked signal. The experimental results show that the proposed method can detect the types and the position of the signal being altered. The performance of the scheme has been improved since the previous methods in terms of inaudibility resulting in the excellent sound quality of the watermarked signal. Because the robustness has to be traded off against inaudibility, the proposed method seems to be not robust. However, the robustness can be improved by revising the cost function.

Keywords: Singular spectrum analysis, Automatic parameter estimation, Speech-tampering detection, Semi-fragile watermarking, Differential evolution.
Sentiment Classification with Gated CNN for Customer Reviews

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Abstract. Recurrent neural networks (RNNs) have been applied to sentiment classification but RNNs is usually heavier than convolutional neural networks (CNNs), turning more interest in the application of CNNs to language tasks. In this paper we propose a method to apply gated CNN (gCNN) with Maxpooling to sentiment classification of customer reviews. In our proposal, the application of gCNN is to sentiment classification, instead of constructing a language model. Our experiment is conducted with Amazon Product Review dataset and Japanese review dataset of TripAdvisor. The whole of each review is used as an input, instead of each sentence. The result is that a simple application of gCNN to sentiment classification achieved sufficient accuracies with the two datasets. Thus, an implication is that gCNN is proven to work fine for sentiment classification much faster than RNNs with fine results in the different language datasets.

Keywords: Sentiment analysis, Gated Convolutional Neural Network, Costumer review.
Keyphrase Extraction as Topic Identification using Term Frequency and Synonymous Term Grouping

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Abstract. Keyphrase are usually used as a representative of in the document. This paper presents a method to improve keyphrase extraction by using synonymous term grouping. Topic identification is recognised by term frequency for keyphrase extraction. We utilize a language model including linguistic patterns and language knowledge such as morphologysyntax. The language model is a probability of word sequence. The focus unit is a pattern of noun adjective combination. The proposed method consist of five processes i.e. preprocessing, candidate selection, semantic-based topic clustering, topic ranking, and keyphrase selection. This experimental result has precision value 54.44 from dataset of IEEE and 39.99 from dataset of SamEval.

Keywords: Topic Identification, Keyphrase, Linguistic model, TF-IDF.
Machine Learning Methods for Assessing Freshness in Hydroponic Produce

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Abstract. Smart farms are increasing in both number and level of technology used. Image processing had been applied to hydroponic farms to detect disease in plants, but detecting the freshness of vegetable had not been addressed as much. In this work we applied image processing and machine learning technologies to the task of distinguishing between fresh and withered vegetable. We compared 3 classical machine learning classifier: decision tree, Naive Bayes, Multi-Layer Perceptron; and one type of deep neural network. Manual feature extraction was performed for the classical machine learning, while the input to the deep neural network was the raw images. We collected the data by taking one image of the vegetable every 10 minutes for one week each time. We labeled the data by considering vegetable from day 1 and day 2 to be fresh while from day 3 onward was considered wither. Experiment results show that the best model for this task was decision tree with a test accuracy of 98.12%. Deep neural network did not perform as well as expected. We hypothesize that the reason is due to overfitting of the training data since the training accuracy for deep neural network was as high or even higher than other classifiers.

Keywords: Smart farm, Image processing, Deep learning, Freshness, Machine learning.
Text Normalization on Thai Twitter Messages using IPA Similarity Algorithm

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Abstract. Twitter often contains many noisy short messages. The noisy text are caused by insertion, transformation, transliteration and onomatopoeia. Text normalization is used for solving these noisy text. In this paper, we present the algorithm that can normalize insertion and homophonic transformation words by converting to International Phonetic Alphabet(IPA) and find the most similarity IPA of out-of-vocabulary and IPA of invocabulary using Levenshtein Distance. We used Twitter corpus that contained 2,000 twitter messages for evaluating the proposed algorithm. The experiment result illustrated that the proposed algorithm returned an accuracy of 79.03% when compared to dictionary-based normalization of LextoPlus returned an accuracy 24.19%.

Keywords: Text normalization, International Phonetic Alphabet, Twitter, Levenshtein Distance.
Abstract. This research proposed the study of factors and model creation for predicting academic achievement and managing the teaching to suit student groups. The clustering Technique and Support Vector Machine technique was applied to this research. The results of the experiment show that 1) the major factors affecting the achievement include 6 factors the pre-study results which are residence, sex, family background, learning outcomes before admission and selected majors 2) the classification by comparing the classification models, it was found that SVM forecasting had the best performance (Accuracy = 92.93, Recall = 0.929 and Precision = 0.929).

Keywords: Academic achievement, Clustering Teaching, Support Vector Machine.
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Comparative Assessment of Indoor Positioning Technologies, Techniques, and Algorithms

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Abstract. Indoor positioning systems (IPS) are used to locate the position of objects in indoor environments. Due to its many real-world applications, IPS has garnered interest from both academia and industry. Each IPS is made up of three major components: sensor technology, position-finding technique, and operating algorithm. The goal of this paper is to examine and independently compare different types of components with the aim to understand and make useful suggestions for improvement. This paper also presents the past and current trends in IPS and predict the future trends in approaches to the design and implementation of IPS.

Keywords: IPS, Positioning techniques, Positioning technologies, Algorithms, Scene analysis.
Blind, SVD-based Scheme for Information Hiding in Digital Images

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Abstract. In this paper, we propose a scheme based on the singular value decomposition for information hiding in digital images. The hidden information is embedded into a transparent, color, host image by modifying some singular values of a matrix that represents one image channel with the lowest pixel intensity. In order to blindly extract the hidden information, we develop new embedding and extraction rules, as well as the image segmentation algorithm. We evaluate the proposed scheme regarding three primary requirements: robustness, imperceptibility, and blindness. Experimental results show that the proposed scheme can blindly extract the hidden information from stego images. Also, it is robust against the white Gaussian noise addition when the signal-to-noise ratio is more than 60 dB. Besides, the proposed scheme distorts host image imperceptibly.

Keywords: Singular value decomposition, Image watermarking, Imperceptibility, HaarPS.
The Limb Leads ECG Signal Analysis in Inferior Myocardial Infarction Patients by Rule Base

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Abstract. Cardiovascular disease is one of the most serious diseases in the world. The electrocardiogram is signal showing the cardiac electrical activity and use to diagnostic of Myocardial Infarction which detects abnormal wave patterns. The anatomic location of the infarcted areas; inferior, anterior, lateral is recommended for treatment decision. Electrocardiogram can predict the risk of patients and guide physician's decision making. This research purposes a limb leads; I, II and III electrocardiogram analysis algorithm using Wavelet transform to detect waveform and rule base to classify Inferior Myocardial Infarction patients. The contribution of this research is investigating the lead which relate to the Inferior infarcts, anatomic location of the infarcted area which not found in any researches. The processes in ECG signal analysis are noise elimination and baseline wander removal, R peak Detection, QRS Complex Detection, ST-segment Detection and Inferior Myocardial Infarction Classification. The results show that the Inferior Myocardial Infarction Classification algorithm has 85% accuracy. Lead III is the most relevant to inferior infarct area, 86.96% relate to inferior infarct. Second is Lead II, 47.83% relate to inferior infarct. Lead I is the less relevant to inferior infarct area, 13.04% relate to inferior infarct.

Keywords: ECG Analysis, Wavelets Transform, Limb Leads, Inferior MI.
Simplicity of Positive Reviews and Diversity of Negative Reviews in Hotel Reputation

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Abstract. User's review on products and services is valuable information for both users and providers. The present paper conducted polarity estimation of 73,589 reviews on hotels in Europe. Users rated one to five points for seven aspects (Value, Rooms, Location, Cleanliness, Checkin, Service, Business, Overall). In this paper, we predicted the polarity (positive/negative) of each aspect by using machine learning method SVM (Support Vector Machine) and feature selection, with more than 4 points being positive and less than 3 being negative. As a result, positive reviews with respect to six aspects, other than Business, were able to achieve 74% prediction performance (F-measure) with only 20 feature words. On the other hand, for negative reviews, optimal prediction performance could not be obtained unless almost all words were used, and on average F-measure was only 27%. The results indicate that positive reviews are simple, meanwhile negative reviews are diverse and hard to predict mechanically.

Keywords: Sentiment Analysis, Hotel Review, SVM, Feature Selection.
Quality Classification of ASEAN Wikipedia Articles using Statistical Features

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Abstract. The quality of Wikipedia articles is still the main concerned in all languages. Wikipedia relies mostly on human editors and administrators to provide the quality of content. But the magnitude of Wikipedia content makes locating all instances of article very time consuming. Therefore, we need the automatic quality detection that can help users to evaluate the quality of articles. In this paper, we propose the feature set to applied for the ASEAN language Wikipedia articles. We investigate the statistical features such as # of link, # of infobox, length of article, # of headings, # of files, # of contributors, # of viewer, # of written articles found in other languages, and # of templates applied in the article. The experiments are perform using Naïve Bayes and Decision tree algorithm. We found that the accuracy of Decision tree (96.34%) outperform Naïve Bayes (86.47%). Moreover, we found that the statistical features play an important role in quality classification of Vietnamese, Indonesian, Malaysian, Thai, and Tagalog/Philippines Wikipedia articles.

Keywords: Quality of articles, Southeast Asian languages Wikipedia, Naïve Bayes, Decision tree, Statistical feature.
Semantic-based Relationship between Objective Interestingness Measures in Association Rules Mining

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Abstract. This work investigates the semantic of 61 commonly used interestingness measures in order to explore their common and distinct characteristics, by means of a two-way contingency table of a pair of variables; A and B. As the first step, a synthetic data of six probability variables; P(AB), P(AB), P(AB), P(AB), P(A) and P(B) and profile of measurements are generated based on P(A), P(B), and P(AB). The exploration will be done based on semantic relationship. Secondly, an extension is done to characterize among 61 interestingness measures. Thirdly, their similarity and dissimilarity among the measurements are investigated in terms of association and correlation points of view. Finally, the semantic hidden in the properties of each measure is revealed.

Keywords: Similarity measures, Association rules, Data mining.
Classification of Tweets Related to Illegal Activities in Thai Language

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Abstract. This paper presents classification of tweets related to illegal activities in Thai language. The unfiltered nature of Twitter allows it to be used as platform for communication about illegal activities. The sheer number of tweets makes an automatic tweet classification needed to detect these illegal tweets. Very little had been done about this issue, especially in the Thai language. Tweets classification is more difficult than standard text classification due to their short length colloquial nature. Furthermore, the training data is imbalanced because legal tweets are very easy to find while illegal tweets of specific types are quite hard to come by. We propose a tree-like hierarchical model where each node is a full deep neural network based on convolutional LSTM architecture. In order to deal with highly imbalanced training data, tweets were classified in two stages: legal/illegal first before being classified among the illegal classes. Furthermore, ensemble classifiers were used to detect difficult illegal classes that were misclassified as legal by the first stage. Experiment result shows that this approach has significantly better performance than the baseline of using only a single network to classify among all classes in a single stage.

Keywords: Tweet classification, Text classification, Illegal tweets, Natural language processing, Deep learning.
Model for Handwritten Recognition based on Artificial Intelligence

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Abstract. This paper proposed a general algorithm for more efficient handwritten recognition. Using handwritten recognition algorithms can reduce the time it takes to convert documents into letters for reducing the workload. The handwritten fonts used in this thesis are multi-script, which consists of Bangla font, Latin, MNIST handwritten alphabet series on prescription. This step has been designed and developed with genetic algorithms in conjunction with artificial intelligence techniques. The result of this algorithm was designed and developed to produce accurate results in the recognition of the Bangla set is 94.05 \%, Latin 98.58 \%, and MNIST 100 \%.

Keywords: Handwritten, Recognition, Genetic algorithm, Artificial intelligence, Multi-scripts.
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3D Foreground Point Segmentation from Background using Centroid-based Min-Cut Method

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Abstract. Point Cloud generation and surface reconstruction of these point clouds are the two main and common steps for a complete 3D model. This system proposed 3D point cloud segmentation as a joint method that can be used between these two steps to get the best and accurate model. Firstly, the proposed system builds the graph in which each point is used as nodes and these nodes are connected by nearest neighbor edges. Based on this graph, then, find the location of the object over the complex and noisy points clouds in which the foreground and background points are closely related. This system is based on the centroid point of the cloud, so it does not need user interaction to predict where is the object location. Based on these predicated object point, the object is segmented by our proposed system, centroid-based Min-Cut Segmentation method. The system experiments on various data set such as large-scale scene and real-world data, in which the points are generated by Structure from Motion (SfM). This proposed strategy provides efficient and gives substantial reductions in time and can be used as the input for the surface reconstruction very well.

Keywords: Point Cloud Segmentation, Energy Minimization, Min-Cut Segmentation, K-Nearest Neighbor, Graph Algorithms.
Visual Big Data Analytics for Sustainable Agricultural Development

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Abstract. To achieve the highest levels of agricultural production, it is first necessary to fully understand the information underpinning complex agricultural systems. This can be achieved through the use of the latest monitoring technology which can generate a constant stream of data concerning the agricultural environment in quantities hitherto unseen. When these data are analyzed, farmers and government advisors are able to use the information to guide adjustments in their activities to enhance productivity. While this kind of approach has been widespread in many industrial sectors, Thai agriculture has not yet seen its implementation on a wide scale. This may partly explain the economic successes in industry while agriculture has lagged behind, especially in terms of worker remuneration. One further problem is that a majority of farmers do not have the education required to take advantage of technology and data analysis. This study therefore seeks to establish a framework to support the use of data analytics in the agricultural context, through the development of a web-based application capable of displaying performance data in farming and thus solving the key issues in the agricultural sector to support farmers. The framework will apply a number of software solutions to support agricultural production across various disciplines. The information provided will assist farmers in managing their operations, and will guide government departments in creating policies and plans for Thai agriculture in order to develop a modern and efficient farming sector.

Keywords: Big data, Agriculture, Data analytics, Sustainable development.
 Applied Artificial Optimization Algorithm in Design Flaws Detection

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Abstract. The detection of design flaws is one of the most important aspects of software quality control, and the process should therefore be an integral part of the development and also the maintenance of software. It is possible to lower costs and extend the useful life cycle of the software simply by detecting design flaws at an early stage, and therefore attempts have been made to automate the procedures involved in detecting and fixing these flaws. One of the most common ways of detecting flaws is through the use of heuristic metrics which use predetermined standards as a means of analyzing the findings. While the approach can work successfully, the problem lies in the determination of those standards, or thresholds. This research study seeks to develop an enhanced method to improve threshold determination to be applied in flaw detection using metric-based designs. Accordingly, for each metric, an algorithm was employed for optimization of the contribution metrics to determine the threshold. The model produced threshold values which could then be adjusted to fit the requirements of the software data input. The findings from the experiments revealed that this approach could generate more appropriate thresholds for application in this context. In addition, the technique was relatively simple and could be used with different software programming languages, reducing the implementation time, and eliminating the need for the specialist expert support which would have traditionally been required in metric-based detection methods.

Keywords: Design Flaws, Detection, Refactoring, Artificial Optimization Algorithm.
A Supporting Tool for Learning to Improve Thinking Skill through Reading Activities

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Abstract. Thinking skill is an important skill required in most of person’s activities, especially in academic level. This paper proposes a tool to support in learning thinking skills from learning by example of good published articles. The focused concept of the tool is to analyze content expression and relations of the contents as a representation of thinking process. The tool is designed to assist on assigning pre-defined content type-related tags and relation among the chosen types on each clause from the selected articles. From experiments, the results showed that the tool helps to increase learning performance. The average precision and recall scores from tagging of the participants using the tool were higher than the participant not using the tool for 0.15 and 0.22, respectively. Moreover, the participants showed significant growth in thinking skills in terms of more correct analysis and critical thinking after using the tool.

Keywords: Thinking skill, supporting tool for learning, Reading analysis, Independent learning, Learning by example.
Thai Sentiment Analysis via Bidirectional LSTM-CNN Model with Embedding Vectors and Sentic Feature

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Abstract. Sentiment analysis is one of the most frequently performed tasks in Natural Language Processing that plays an important role in marketing research. It allows us to understand customer sentiment. The outcomes from this kind of analysis can be used to improve products and services. Recently, a Word2Vec model, a technique for word embedding (converting text into a number) has been developed and used successfully to a degree to get the sentiment of customers from the text responses that they provided. This work attempted to incorporate two more features—part-of-speech and sentic features—to make the analysis more accurate. The part-of-speech feature identifies the type of words that better convey various sentiments, while the sentic feature identifies the emotion underlying certain words. Combining Bidirectional Long Short-term Memory and Convolutional Neural Networks models with several combinations of the features mentioned, we performed a sentiment analysis of Thai children stories and found that the combination of all three features gave the best result at 78.89 % F1-score.

Keywords: Sentiment Analysis, Deep Learning, Word Embedding, Part-of-Speech, SenticNet2.
Predicting Learning Organization Factors that Affect Performance by Data Mining Techniques

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Abstract. This research proposed factors and model affecting performance in learning organization prediction by using the classification techniques. Results show learning organization factors affecting performance composed of 8 factors including personality factors focusing on excellence, learning dynamics, common vision factors, team learning factors, workload factor, and performance factor. Comparison of classification models showed that SVM technique was the most suitable technique in prediction of learning organization affecting employees performance in the Bank for agriculture and Agricultural Cooperatives in the western region with 98.33% of accuracy, 0.025 of precision, and 0.984 of recall values.

Keywords: Learning organization, Data Classification, Decision tree, Naïve Bayes, support Vector Machine.
A Comparative Study of Classification Liver Dysfunction with Machine Learning

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Abstract. This article presents the comparison and comparison of data of patients with liver dysfunction. By collecting information on liver disease and collecting data for selection in data mining. The Liver Disorders Data Set (UCI Machine Learning Repository) was used to compare the 359 patients with liver disease. The classification consisted of 7 types of liver disease and divided into 2 classes, namely, those with normal liver function and those who did not. Abnormal liver. The result was that the data was sorted using the Rules Part accuracy rate with 64.62 %. The OneR rule technique was 58.21 %. The Tree Decision Stump technique was 60.16 %. Tree REPTree has 62.67 % and Tree Random forest technique is 75.76 %. The results of this study showed that the tree random sampling technique was used to extract data from the 359 samples. The sample was extracted with 75.76 %. Because of the comparison results, Tree Random forest provides the most accurate value.

Keywords: Classification, Comparative, Liver, Dysfunction.
iSAI-NLP 2018 Abstracts (Thai Track)
Evaluating Website Performance by Designing Human-computer Interaction

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Abstract. The emergence of the Internet has resulted in "the fourth media" that comes after books, radio, and television, which are growing rapidly. Or can not evaluate all site availability. Therefore, creating an HCI evaluation of a web page is very valuable. The design of HCI is largely based on the aesthetics of design, which is a matter of personal preference. The user model evaluation is more widely used than the design evaluation. However, this study lacks the participants to confirm the accuracy. Therefore, this article includes the user evaluation. And the HCI design evaluation to test the government website. The researcher chose the government website as the HCI evaluation because the government website has a large number of visitors. And there are different age, sex, education to test the authenticity of the government website. The researcher uses a form of assessment that is named. The Keystoke-level model is used as a benchmark for evaluating government websites.

Keywords: Human Computer interaction, Website, Evaluation.
Data Analytics for Capacity of Health Services in Thailand using R Programming Language

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Abstract. Healthcare facilities are important for empowering human resources of the nation. In order to better maintain health of our human resource in our country, effective healthcare facilities in each area are needed. Big Data analytics on healthcare can be useful as a guideline for planning healthcare resources and facilities to meet the demand for healthcare services. This paper presents the data analytics for capacity of health services in Thailand using R programming language with the use of patient daily data in each province during the year 2017 and the data of healthcare facilities. Such data is provided by the Information and Communication Technology Center, Office of the Permanent Secretary, Ministry of Public Health. Furthermore, we define a scoring for evaluate the capacity of healthcare services, namely Healthcare Capacity Scoring (HCS). The results show that provinces with high average number of patients have high HCS, but some are low. The information can be used as a guideline for better planning sufficient healthcare services to meet with demand.

Keywords: Big Data, Data Analytics, R Programming Language.
Driving Behavior Surveillance System using
Facial Feature Detection

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Abstract. The objective of this research is facial feature detection while driving. One common cause of an accident is fatigue, tired when driving for a long time, there is a chance of sleepy. Researchers are interested to develop a mobile application for the Android operating system. This application will detect the face of the driver and observe the behavior of the face, eyes and driving time. If malfunction over a specified level, the application will be alert. These results have good performance, precision, reliability and acceptable.

Keywords: Facial feature detection, Mobile application, Android.
Analysis of Government Projects for the National Strategy and Country Reform plan

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Abstract. This research applies data science techniques to analyze data of more than 9,319 government projects, according to the national strategy and the national reform plan from eMENSCR (Electronic Monitoring and Evaluation System of National Strategy and Country Reform). The data was passed through the data preparation processing using R programming language, then analyzed using descriptive statistics. Tableau software and statistical tools in R were applied to visualize data and analyze dimension relationship of the project records. The results of data analysis clearly demonstrate the landscape of the projects, following the national strategy and the national reform plan.

Keywords: Analysis, National strategy, Country reform plan, Data preparation, R Language, Tableau.
Automatically Classifying Government Project Proposals according to the National Strategic Program using Text Mining Techniques

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Abstract. 6 National Strategies and 11 Country Reforms are designed in a set of trees containing of objectives, issues and indicators in a hierarchical manner. Such complex structures make manual selections of relevant nodes from the national strategy or country reform trees difficult and error-prone. We propose a recommender system, based on text mining techniques for suggesting relevant objectives, issues or indicators from the national strategies or country reforms for a certain proposal. Speculatively, the system will be trained by a set of existing proposals from eMENSCR system, each of which was annotated with objectives, issues or indicators relevant to some national strategies or country reforms by their owner. Similar proposals will subsequently be grouped together, as their common objectives, issues or indicators that are often used to annotate by their owner will be identified and used as recommended annotations for new similar proposals.

Keywords: National Strategy, Text Mining, Document Clustering.
Development of Dataset Integration Tool for Open Data

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Abstract. This paper discusses about the technique and the usage of datasets integration tool for open data for OPEN-D system. The tool’s objectives are to merge and to normalize tables, which will be resulted in a view of integrated datasets. Then the tool will automatically transfer the view to the OPEN-D system to get RESTful API, RDF file, CSV file. For developers, these API and files are easier to use for program development. OPEN-D also comes with the ability to shows table data as a graph, which is a useful function for data scientists or researchers. The integrated dataset will be stored as a view in the OPEN-D database. That means it can be used as a newly uploaded dataset. So the user can reuse the integrated datasets created from the tool to integrate with other datasets recursively.

Keywords: Tables merging, Table normalization, Open data.
KICSS 2018 Abstracts

(Sorted by Paper ID)
KICSS2018-120

Block Sweetie: Learning Web Application Development by Block Arrangement

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Abstract. In order to build a Web application, understanding of the programming language, databases, SQL, and HTTP is indispensable. We had proposed a PHP-based framework that can facilitate understanding of these concepts and reduce burdens of web applications development for novice learners. However, the novice learner had troubles with syntax errors caused by mistypes. To relieve the anxiety of text editing, we have developed Block Sweetie that introduces block-programming editor for the proposed framework. The visual representation and the intuitive operations on block arrangements prevent troubles of input errors and mistypes. We have designed Block Sweetie with “switch and observe” approach, which reduces extra burdens such as saving files and reloading pages. Therefore, novice learners can efficiently perform trial and errors. We have also prepared sample block programs that help novice learners to understand related topics and technologies in a short time. From our preliminary experimental lecture, we found that Block Sweetie was effective for understanding differences of HTTP methods.

Keywords: Novice Web Developer, Web Framework, Block Editor, Web Application Design.
Effect of Auto-complete Function on Processing Web IDE for Novice Programmer

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Abstract. Web IDE is suitable for novice learners because it can reduce the troublesome of constructing programming environment. Since most of the Web IDEs utilize text-based programming, a certain level of typing-skills is required for learners. For that reason, the performance of learning programming may be affected by the typing skill of the learner. In order to mitigate the influence of the typing skill, we introduced automatic code completion to the Web IDE for Processing language. We investigated how the automatic completion function was used for novices through an actual course. Since the snippet of “if” and “for” statements already contained parenthesis and curly brackets, the auto-complete function significantly reduce the typing of these special characters. From a questionnaire survey, a strong positive correlation was found between the use frequency of the function and the necessity that learner feels.

Keywords: Programming editor interface, Typing skills, Processing, beginners, Creativity support.
Proposal and Evaluation of Contribution Value Model for Creation Support System

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Abstract. Participants in the creation projects of new products and services start a discussion by formulating the concept or posing a question. It is important for them to exhibit creativity and propose diverse ideas. In order to support the creation, supporting the connectivity of information and motivation improvement is important. It is expected that if the participants feel they are meaningfully contributing to the project, they will become more motivated. In this study, we propose an evaluation model that visualizes the degree of contribution of each participant as a contribution value when the project reaches points that require creativity. Through this model, one’s own ideas and opinions can be visualized as a chronological contribution value throughout the course of a discussion. The evaluation results demonstrate that the visualization of the course of a discussion motivates the participants to contribute to others and to the project.

Keywords: Creation Support, Collaboration; Contribution Value, Motivation Improvement, Evaluation.
Intermodal Network Design in Freight Transportation Systems

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Abstract. This paper presents a study on intermodal transportation network design problem. The problem is to minimize the total of fixed facility location cost, the transportation cost, the transfer cost, the emission cost, while at the same time, satisfies customer demand, the flow conservation over different transportation mode, the terminal capacity, the vehicle minimum utilization, and the percentage circuitry constraints. The mixedinteger programming model is developed and analyzed with data from the south of Vietnam. The transportation mode of consideration is truck and inland waterway. Results indicate that the intermodal transportation model can reduce the total cost significantly when compared to the unimodal model.

Keywords: Intermodal transportation, Transportation network design, Emission cost, Intermodal transfer cost.
The AI Model Canvas for Successful Startup Companies in Education

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Abstract. Artificial Intelligence (AI) is the next wave of digital disruption, a new ventures and startups companies should prepare to enhance a new value proposition, identify their benefit and use within their business plan, strategic blueprint and production system. The Artificial Intelligence development requires a communication across different domains, like specialists, engineers, data scientists, ecosystem partner and stakeholders. In this paper, we propose a semiformal specification technique for describing conceptual design, for doing project, produce, promote and provide AI technology into organizations that called the AI Model Canvas. A new methodology is proposed to complete business model for new venture and to design & implement the company digital transformation. The AI Model Canvas uses clear description and differentiation of the roles of stakeholders, customers, AI strategy, AI value proposition, ecosystem & partner, AI service, AI model development, AI data source, AI policy&procedure and AI success criteria evaluation. It can be used in an analytics project as well as assembly in the creation of new product lines. Based in some use cases, we illustrate the conceptual design approach in defining AI projects by using different type of AI Model Canvas used for startup company in education.

Keywords: Artificial Intelligence, AI Canvas, startup, Machine Learning, Deep Learning.
Designing a Soft-skill Cultivation Platform for Health Care Professionals (HCPs): A Study of BRAC’s Community Health Workers (CHW) of Bangladesh

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Abstract. Health Care Professionals (HCPs) require soft-skill for dealing with patient, judging situation, making a prompt decision, solving critical problems and so on. HCPs develop skills through formal learning in the academy, and informal learning during their professional career. However, during the professional carrier HCPs need to deal with critical situations. Very often they face difficulties in bridging the gap between formal education and informal learning. Accordingly, the study aims to propose a skill cultivation platform to bridge the gap between formal and informal learning including analyzing the situation of soft skill gap among the HCPs and evaluating the existing soft skill cultivation process. The study is based on primary data collected from interviews with BRAC officials and Community Health Workers (CHWs) of BRAC. Besides, different pieces of literature were reviewed. The result shows that being the world’s largest NGO, BRAC has huge soft-skill gap among the CHWs. Moreover, there is no formal decision-making training for CHWs. In addition, CHWs cannot develop their competency due to remoteness, time constraints, and other circumstances. Therefore, the study proposed a web-based soft-skill cultivation platform for the CHWs. The proposed platform may serve as a tool for developing soft-skills among CHWs.

Keywords: Soft-skills cultivation, Decision-making skills, BRAC; Community Health Workers (CHWs), Health Care Professionals (HCPs).
Study of Intellectual Capital in Japanese Financial and Insurance Industries

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Abstract. Measurement of intellectual capital is a topic discussed in the field of knowledge management. This paper presents the degree of accumulation of intellectual capital for financial and insurance companies listed on the Japanese stock market. The observation period measures for 20 years from 1997 to 2017 and we will show the 20 years trend of intellectual capital by industries using easily accessible data. Intellectual capital of Japanese insurance companies is almost the same as other countries. However, we found that Japanese banks’ intellectual capital is quite low comparing to the other countries.

Keywords: Management; Intellectual capital, Assessment of knowledge.
A Study on Intellectual Property Strategy based on Technological Trajectory Analysis of IoT related Technology

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Abstract. In recent years, movement related to smart manufacturing technology has been actively promoted as a collective term for improving the productivity of factories and creating new business as one of the applications of IoT related technology throughout the world. The Japanese Patent Office estimates that the market size including Japanese manufacturing will rapidly expand after 2018 in the technology trend survey report on the smart manufacturing technology in 2017. In addition, the Japanese Patent Office has implemented measures to appropriately examine applications related to IoT, including establishing a patent classification (ZIT) on IoT related technology ahead of the rest of the world. Therefore, we examined intellectual property (IP) strategy based on detailed patent application technology trend survey (technological trajectory analysis) on research results (innovation) using patent classification (ZIT) on IoT related technology.

Keywords: IoT related Technology, ZIT of patent classification, F-term, Technological trajectory analysis, IP strategy.
Speaker Choice Method based on Multi-armed Bandit Algorithm for Online Discussions

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Abstract. This paper proposes an application of the multiarmed bandit algorithm to online discussions. We assume a speaker choice in discussion by a facilitator as a multi-armed bandit problem: Each participant is considered as an arm of a slot machine, and a facilitator as a player. The facilitator’s behavior when they select one participant can be considered to be equivalent to the behavior of a player who selects one slot machine and plays it in the multi-armed bandit problem. As a reward of slot machines, we define a “discussion score” to evaluate each post. In addition, in order to consider conflict between participants in a discussion, our method classifies the participants into groups and determines the next speaker based on clustering results. We demonstrate that our method can select participants who posted good ideas and opinions and promote participants to engage other participants by using questionnaires.

Keywords: Multi-Armed Bandit Problem, Decision Support System, Automated Facilitator.
Indonesian Human Profiles of Good Environmental Knowledge

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Abstract. Every citizen in Indonesia should possess environmental knowledge as basis for being environment friendly. Currently, many people are not aware of the environmentally conscious behavior. This study aims to reveal the knowledge of the population and the variables affecting their awareness of environmentally conscious behavior in Indonesia. Residence classification, gender, age, education, work status, household income, information facility, information sources, and socialization/training affect environmental knowledge. The data used are secondary data obtained from Environment Caring Attitude Survey (ECAS). The analytical method used is binary logistic regression. The analysis shows that the residence classification, gender, age, education, work status, household income, information facilities, information sources, and socialization/training significantly affect knowledge about the behavior of environmental concern in Indonesia in 2013. Therefore, the researchers suggest that the government should pays attention to the availability of education and the implementation of education/training related to the environment.

Keywords: Behavior Of Environmental Concern, Demographic And Socio-Economic Factors, Environmental Knowledge.
Toward the Inheritance and Application of Cultural Symbols in Apparel Creativity Design: A Case Study using Seasonal Insects

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Abstract. Integrating cultural elements into creative works developed into an important trend in modern design. Based on Chinese traditional apparels pay attention to the theory of auspicious semantics in the pattern decoration, to the expansion practice of creative design semantics of seasonal insect culture in the apparel, the Items Inheritance Activation (IIA) model was derived. It is used to creative design practice and research to extend the inheritance and application of the oriental people’s aesthetic character, philosophy of thought and natural way of thinking in the form of modern style design works. The practice case of creativity is based on the element of five insects of Dragon Boat Festival, which shows how to integrate the image of seasonal insects into our daily fashion design and lifestyle. Let the designer’s inspiration source and design creativity thinking find a continuous design language in the items inheritance of culture activation.

Keywords: Symbols, Apparel, Seasonal insect, Creativity practice.
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Analysis of Aging Population on Consumption Structure: Creativity in Effective Industry Supply

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Abstract. Consumption upgrades lead the industry to upgrade, to increase new supply with institutional innovation, technological innovation, product innovation, to meet the creation of new consumption. The purpose of this study is to analysis the consumption structure on aging population, then standing on supply-side to creative supply opinions and style to promote the consumption upgrade. By using the ELES model to analysis the characteristics of Liaoning province residents in China according to the data from 2006-2016, the results show that the material consumption demand of residents has been basically met, the demand for service consumption has been increasing, and the traditional consumption has been upgraded to new consumption. While the effects on consumption of changes in aging population, this paper predicts the tendency of the consumption structure from 2017-2030. It suggests industry creative measures should be toward diversified consumption supply, environment and system to improve the effective industry supply, to stimulate economic development.

Keywords: Aging population, Consumption structure, Creativity, Industry supply.
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Improving Technology for Open Lecture Distance Learning Support Systems

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Abstract. To fulfill the need for social systems that enable lifelong learning in an increasingly advanced and complex society, universities are developing contribution-oriented courses that leverage their intellectual resources in the form of open lectures. In so doing, universities play a key role in promoting lifelong learning. In open lectures, universities utilize ICT to offer courses to a wider range of students. Among the technologies used, distance learning systems allow universities to extend courses to many people in remote locations. However, according to interviews with personnel engaged in conducting open lectures, these distance learning systems face challenges when used for open lectures, primarily in terms of flexibility and interactivity. In response to this, our research has developed a new form of distance learning system to improve the value of open lectures, equipped with video streaming using general-purpose equipment and cloud technologies, as well as a comment system using active filtering. Additionally, in cooperation with the lifelong learning and industry-academia collaboration departments of three universities, we conducted demonstration trials of the developed system to confirm its usability, and made subsequent improvements.

Keywords: Distance learning, Open lectures, Virtual learning, Information and communication technology, Social design.
FaGoN: Fake News Detection model using Grammatical Transformation on Neural Network

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Abstract. These days, most of fake news are detected and verified by people, which requires a great amount of time and effort. It is difficult to figure out the truthfulness of the news by machine algorithm because the sentences have various forms. In this paper, we shall present a fast and efficient fake news detection model which can figure out whether the given proposition is true or not from article by exploiting grammatical transformation based on deep learning. Our model consists of four layers: word embedding layer, context generation layer, matching layer and inference layer. In word embedding layer, the words in proposition are embedded into word vector. In context generation layer, the word vectors enter into LSTM layer and generate context vector. In matching layer, attention vector is generated from the contextual embedding vector from the previous layer computing the weighted sum. Then, the hidden state vector from LSTM layers and attention vector are compared through matching operation. In inference layer, our model calculates the similarity between the generated sentences and the sentences in articles, and classifies the answer, true or false. We shall evaluate our model calculating the perplexity to figure out whether the generated sentences are grammatically correct. Also, the model is tested by changing the sentence group’s size to find the optimal size of the group. By showing the Our model figured out the fake news very well with the test of CNN news dataset getting the right answer.

Keywords: Natural Language Processing, Fake news, Sequence to sequence, Neural network, Deep learning.
A Collaborative Active Learning Method for Chance Discovery and a Virtual Coordinator of Relaxing Travels Plan with Attractive Experiences

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Abstract. An active learning of creating sharing merit between visitors and residents could be helpful improving both QOL in relaxing travels and activating local city tourism. We propose a “relay assist type of Collaborative Active Learning method for enhancing creativity in Feedback Oriented Design (CALFOD-ra)” together with Line Bot concierge that could help supporting a chance discovery and coordination with a series of fun experiences in relaxing travel plan. We also discuss a portfolio of improving tourism in a local city.

Keywords: Collaborative active learning, Portfolio, Chance discovery, Coordinating attractive attractions, Relaxing travel.
Abstract. The principal benefit of clinical guidelines is to improve the quality of care received by patients. Although risk factors are defined in clinical guidelines, the semantics of diseases in terms of the weights of treatment is somehow indecipherable. We assume that there are different effects to the fulfillment of prevention management among the diseases’ categories such as main diseases and sub diseases. To this end, we analyze the effect of the semantics of diseases that are risk factors when prevention management fees are calculated, by using propensity score matching (PSM). Our key idea to tackle the problem of identifying the important categories of diseases for an analytical purpose is to decompose diseases into the sub categories based on the importance to the fulfillment of prevention management and apply PSM to each of the sub categories for estimating the effects derived from odds ratios using observational data. In this paper, diseases are divided into three categories: main diseases, comorbidities and complications. As the case study, we focus on the pulmonary thromboembolism (PTE) where cancers are regarded as part of the risk factors. We use the diagnosis procedure combination data of 44,257 patients from Jan 1, 2014 to Mar 31, 2018 in University of Miyazaki Hospital. The odds ratios between disease and non-disease groups adjusted by PSM based on six covariates showed that the ranking of the significant diseases’ categories at the calculation of the PTE’s prevention management fee is followed by main diseases, complications and comorbidities.

Keywords: Propensity score matching, Semantics, Diseases, Prevention management fees.
Developing Innovation Skills in Second Language Education Cultivation of Creativity and Intercultural Communicative Competence

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Abstract. The rapid development of globalization requires teaching innovation skills in second language education. It is assumed that second language education fosters two capabilities (creativity and intercultural communicative competence) as the innovation skills. This paper proposes a curriculum to switch from traditional courses centered on language knowledge to the innovative courses that can cultivate learners’ creativity and intercultural communicative competence. First, the curriculum focuses on how to develop creative-thinking skills through vocabulary free association practice, vocabulary compulsory association practice, and vocabulary association writing. Second, the curriculum presents teaching methods by integrating the target cultures into courses, such as learning by video, encounter project, and simulation. In addition, the curriculum for the two capabilities will promote learners’ motivation and their expertise, and then will lead to the integrative development of the innovation skills in the age of globalization.

Keywords: Language education, Globalization, Innovation skills, creativity, Intercultural communicative competence.
KICSS2018-141

Research on Museum Lighting Design Method: Emotional Effects based on the SVOE Model and Creative Thinking

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Abstract. Through the interdisciplinary integration of multidisciplinary majors and the study of creative thinking, this paper combines theories of architecture, design, optics, and psychology to propose a lighting design method based on visual factors and propose a theoretical model of lighting design based on "SVOE," through the use of creative thinking. As a function of the evolution of spatialization, visualization, optical indexing, and emotionalization, the theoretical model of lighting design innovates on the thought processes and evaluation of lighting design. Based on research related to LED light source lighting design methods, the design of humanized emotional lighting that considers functional rational lighting design as well as human emotions has emerged as an urgent problem that must be addressed. This paper applies psychological theory and research systems to approach emotional lighting design and practice through emotion analysis design methods based on spatialization, visualization, optical engineering, and psychology. The process of lighting design entails the transformation of a 'definition concept' and a 'solution concept', whereby information is transferred from the concept idea to drawing practice. This type of design conceptualizes and defines concepts, ultimately transforming them into a solution. The results of this study are expressed in design drawings and architecture spaces.

Keywords: Creative thinking; Museum lighting design; Spatialization; Visualization; Emotionalization.
KICSS2018-142

Finding Grammar in Music by Evolutionary Linguistics

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Abstract. In this paper, we assume that the progression rules of music are in a subclass of context-free language, and we let computers find them autonomously. We employ the Iterated Learning Model (ILM) by Simon Kirby, and ask if the computer can find a music knowledge that is common to us, and also if the computers can compose music independently of our music knowledge. In this research, we have shown an example set of rules found in the 25 `etudes of Burgm¨uller by beat. Although many of categories in the tree seem redundant and futile, some of them reflect probable progressions, which well match with our human intuition. This experiment has several virtues compared with other grammar-based formalism for music. One is that we do not need to provide a dictionary beforehand. The other is that we can exclude the human-biased intuition, which had hindered the definition of creativity.

Keywords: -
Comment Evaluation by Combining Comment and Word Mutual Evaluation Method and LSTM Evaluation Method in Lecture Questionnaire

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Abstract. Many universities give free-description questionnaires to students to obtain feedback on faculty development (FD). When this is done, a proper analysis of the students’ comments is necessary. The number of comments from the free description that can be acquired for the FD activities is often not very large. To evaluate a small amount of data with approximately 1500 comments here needs to be some improvement in the currently available evaluation methods. In this study, we propose a probability distribution for the evaluation. We also propose a method for mutually evaluating the words and the comments long with the LSTM evaluation method by using neural networks. However, these methods seem to have differences in accuracies between the estimated values of the closed tests and the unrated comments. Therefore, we apply two methods to the bootstrap method to estimate the unrated comments; we also propose a method to incorporate the comments into our solution.

Keywords: Comment evaluation, Free description analysis, Neural network, LSTM, Incorporating method.
Named Entity Sentiment Classifications using Peripheral Words and Dependencies in Online Discussions

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Abstract. The sentiment classification method of posts and sentences have been proposed in several online discussion forums. However, large-town online meetings require new methods to determine the sentiment polarity of each keyword because several topics are discussed simultaneously. We propose a sentimental classification method for each named entity in various online discussion forums. We employ machine learning for the web discussion corpus and sentiment lexicon that we have developed. We define three features that focus on the peripheral words of the named entities and on the modification structures. Our experimental results exhibit that the features of the peripheral and modification structure improve the f1-score compared with the baseline of the f1-score.

Keywords: -
A Study of Lexical Ambiguity in Large Forum Discussions for Multidisciplinary Knowledge Engineering

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Abstract. Lexical ambiguity is a challenging issue in multidisciplinary knowledge engineering due to the tendency that lexical terms can be used among different domains with different specific meanings. Particularly in large forum discussions, such ambiguous cross-disciplinary terms hard to be identified and detected by the discussion participants because domain expertise from several relevant fields is required to detect those terms and discover the actual divergence of interpretation. Having many ambiguous terms in the discussion context will result in gradual misunderstanding and delayed knowledge construction. We studied the effects of data sizes and morphological analysis in discovering ambiguous cross-disciplinary terms in large forum discussions. Our findings are twofold. First, it is more likely to discover cross-disciplinary terms as forum discussions deepen. This correlates with domain experts’ tendency to use general terms in metaphorically describing domain-specific concepts, therefore causing lexical ambiguity. Second, we found that lemmatization outperforms stemming in forming more understandable key terms. This is because lemmatization eliminates only inflectional affixes and keeps derivational affixes. On the other hand, stemming eliminates both types of affixes, causing semantic bleaching.

Keywords: Multidisciplinary knowledge engineering; Lexical ambiguity, Network text analysis, Forum discussion, Morphological analysis.
Generating GIF from 3D Mesh and Point Cloud: An Automated Software

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Abstract. We present an automated software to create a GIF animation using a sequence of images extracted from a 3D model. The software uses the features of the model such as: vertices, faces, colors, and normals. A quality of the animated GIF depends on the number of extracted images.

Keywords: GIF, Point Cloud, 3D Mesh.
Handsfree Interactive Music Game Development with Motion Sensing Technology

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Abstract. Music games are almost entirely oriented around the players interactions. This genre has been popular since 1997. The usual interface is a joystick, a dance pad, an arcade controller or a touchscreen. In this paper, we present a new experience and excitement playing music games by implementing a new style of hand movement interaction using motion sensing technology with the Leap Motion device as well as the algorithm to generate a rhythm sequence pattern.

Keywords: Music Game, Virtual Interaction, Leap Motion, Game Design and Development, Unity.
**Constrained Clustering with Seeds and Term Weighting Scheme**

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**Abstract.** While traditional unsupervised learning is blind and the performance relies on the choice of initial seeds. The idea of constrained clustering can use a small number of labeled instances to partly guide a large number of unlabeled instances. It focuses on a set of predefined classes with an aim is to increase the performance of supervised and unsupervised learning using constraints. This paper proposes a new idea of semi-supervised learning based on particularly seeded constrained clustering, where the clustering guidance comes from the statistics of a small set of labeled data. In contrast with existing approaches in seeded K-Means where the labeled instances are specified. However, the proposed work investigates how weighting obtained from a training set affects the seeded-clustering results. Experimental results are demonstrated on three groups of term-weighting statistics; in-collection, intra-class, and inter-class based on frequencies/distributions and an ambiguity class pass entropy value. Text datasets is studied in our experiment. The result also depicts that the term weighting scheme is a potential mean to control/guide the initial and clustering process over a standard normal term weighting scheme.

**Keywords:** Semi-supervised, Term weighting, Distribution class, Ambiguity class, Seeded k-means.
An Automatic System to Detect Exudates in Mobile-Phone Fundus Images for DR Pre-screening

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Abstract. Diabetic Retinopathy (DR) is an eye disease blamed to be a major cause of vision loss. However, this worst outcome is preventable if a patient is detected at the early stage. In this work, we make a system that detects an exudate which is one of abnormality signs of DR. The system is designed to work specifically on retinal images obtained from a mobile-phone with a portable retinal lens. Our system can achieve a true positive rate and accuracy are up to 96% and 82%, respectively. High accuracy, quick processing, portability, ease of use, and economy are main advantages of this system that are potentially accelerate prescreening rate.

Keywords: Diabetic retinopathy, Mobile-phone fundus images.
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A Quantification Technique of Air Trapping in Lungs using Stepwise Regression and Neural Network from End-inspiratory and End-Expiratory CT-images

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Abstract. This work studies on air trapping problem in lungs using supervised machine learning technique. Firstly, we aim to detect an abnormal signal from the expanding or shrinking ability between end-inspiration (EI) and end-expiration (EE) phases of a breath which is calculated by using the EE to EI ratio (RatioEE-to-EI) from the CT image pairs. Secondly, the attenuation of Hounsfield Unit (HU) is determined to explain the abnormality of air trapping problem. If there is an abnormal signal, the DHU will be changed to be approximately lower than 100 HU. The alignment of pair images is manually set at the carina as a centroid. After that, the preprocessing is to set the window width (WW) and window levels (WL) as 1000 HU and -700 HU respectively. Finally, all features are combined and Stepwise Regression is used to select relevant features based on their similarities which reduced the feature dimension from 20 to 10 contributes. A traditional Neural Network and the proposed method are compared to improve the performance of the predictive model. It is found that the proposed method yields the accuracy (ACC) at 85.8% with 0.74 of F1 score and the false negative (FN) are also reduced from 11.2% to 9.7%.

Keywords: Pattern Recognition, Stepwise Regression, and Neural network.
Weather Scenario Generation Game

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Abstract. The unavailability of seasonal weather data at the simulation time (often beginning of a growth season) forces decision makers in crop growth assessment to consider multiple weather scenarios, which are often generated from longtime observed data. Ironically these scenarios immediately become “outdated” as soon as the season begins, because they are always different from newly observed data. In this paper, we investigate this dilemma and in particular address three questions: determination of most successful scenario, classification of scenarios into fresh and stale, and generation of a new scenario from fresh scenarios. Algorithms to solve these questions are given as strategies for prediction games of weather generators. We also elaborate on the applications of our results in networking existing weather generation web services.

Keywords: Weather Generator Web Service, Weather Scenario, Prediction Games, Meta-induction, Crop Modeling.
A New Dimension for Smart Cities, Driven by an Economic and Localization perspective

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Abstract. Smart city (SmC) is a model improve the urbanism and quality of life in cities. The understanding is that a SmC is filled with state-of-the-art technology whether IOTs or ICT. Furthermore, all the things in a SmC should be aiming towards being peoplecentered, whether it is technology, infrastructure or facilities, otherwise, it is useless to build a SmC. But in an effort of varied debate, the 2 concepts of Technology Driven and Human Driven, has an important question that is neglected “what are peoples real needs?” Many cities are being developed into SmC but those are still facing with the problems such as unemployment, poverty and social disparity, driven mainly by economics, which is a major component of the urban sustainable development. Consequently, the current SmC model does not answer the people’s real needs, it merely presents a modern state of the city administration. This research is focused upon the SmC model derived from the real needs of the people. By presenting an Economic Driven and Economic Factor and the Localization of the SmC, the objective is to present a solution and improve the problem of urban sustainable development.

Keywords: Economics driven, Localization smart cities, Sustainability, Urban development.
Emotion Classification using Brainwave

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Abstract. Emotions have an indispensable role in human life to reflect a human interaction. It is an important role in the aim of media design, be it videos, music, or games, to understand more about user. In the interaction between human and media is significant issue, this can be measure honesty and continuity by using physiological signal, especially, Electroencephalogram (EEG). EEG is an electrical activity from voltage in the brain or brainwave. It was used to evaluate consumer satisfaction that is one way of neuromarketing in action. In this paper classify three kinds of emotions, positive, neutral and negative on valence scale in emotional dimensions, stimulus by video clip. The EEG collections are selected by power spectral density (PSD) as a feature. The data are stratified 10-fold cross validation and compare with four classifiers, namely support vector machine (SVM), k-nearest neighbors (KNN), naïve Bayes and decision tree (DT), to explore the appropriate algorithm to classify emotion using brainwave. The best accuracy in positive and negative emotion is SVM, and the best accuracy in neutral emotion is DT. The average test accuracy in three emotions of 91.67% is SVM. All of these are beneficial to develop emotion classification system for conduct experience design while users interact with media.

Keywords: Classification, Emotion, Electroencephalography, Valence, Neuromarketing.
Design and Implementation of Group Work Monitoring System for Exploring Creativity

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Abstract. One of the objectives of group work is to make new idea, method, design, product, etc., which is essential task requiring creativity. When we evaluate or analyze activities in group work, peer and/or self-evaluation by questionnaire is often taken. Such method of evaluation is adequate in order to explore various aspects of quality which is involved in the group work, however, it is not easy to analyze how each member of the group was in active or just to join the discussion, following time transition. In order to analyze the activity with regard to conversation between one member and another, protocol analysis, which tracks conversation between one person and another, is employed as one of the typical method. Protocol analysis basically focuses on direction, frequency, and verbal contents of conversation. Therefore, affective status of members, which is one of the aspects considered to be related to the degree of creativity. In this paper, we describe a system for monitoring emotional status of each members involved in group work by means of the analysis of vocal features. Since vocal features, such as f1 frequency or pitch, are known to be related to affective condition of a person, the proposed system keeps track of such frequencies of multiple persons simultaneously and visualizes the transition of such frequencies on screen. The proposed system can be utilized to analyze the status of affective condition of each member of the group to find when he/she was active to contribute to present the status of higher creativity.

Keywords: Group work, Affective information, Status of creativity, Affective information analysis, Vocal features.
Automatic Generating UML Use Case Diagram and Test Cases based on Classification Tree Method

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Abstract. The processes in software development by Object Oriented methodology have many stages, and those take time and high cost. The inconceivable error in system analysis process will affect the design and the implementation process. The unexpected output is the reason why we need to revise the previous process. The more rollback of each process takes more expense and delayed time. The implemented software, which is efficient and reliable and meets the user’s requirement, comes from the good test process. Unified Modelling Language (UML) is the tool which uses symbols to describe the work process in Object Oriented Analysis (OOA). This paper presents the approach for the automatically generated UML use case diagram and test cases. The UML use case diagram is generated from the event table, and the test cases are generated from use case specifications and Graphic User Interfaces (GUI). Test cases are derived from the Classification Tree Method (CTM) that classifies data to a node present in the hierarchy structure. Moreover, this paper refers to the program that generates the use case diagram and test cases. As a result, it can reduce work time and increase efficiency work.

Keywords: Classification Tree Method, Test Case, UML Use Case Diagram, Use Case Specification.
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Revealing the Important Features of Mobile Phishing

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Abstract. Phishing detection technologies are heavily relying on the feature selection. In this paper, several existing anti-phishing and anti-malware solutions on mobile environments are reviewed in order to identify the most frequently used features. The four important features (control and data flow, permission, intents, and Android APIs) that are frequently found in mobile phishing are revealed. The nature of each feature on how it can be a threat especially on mobile devices is also identified. An experiment is conducted to verify that these features are important in mobile phishing detection using a dataset consisting of more than 9000 apps. The comparison of detection accuracy which used these four features and other features is also discussed. According to the experimental results, these four feature sets are considered important features in the mobile phishing detection.

Keywords: Feature selection, Machine learning, Android package, Android malware, Phishing detection.
Realization of Organic and Dynamic Creativity Support Tool for Promoting Ethical AI Design

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Abstract. In recent years, the significance of ethics in artificial intelligence (AI) has been increasingly recognized, and ethical principles and cases have been proposed by academic societies, administrative organizations, etc. However, it is hard to say that AI engineers have adopted these results, so there is a gap between the suggestions and the research and development. We therefore set the realization of organic and dynamic creativity support tool to promote ethical design by AI engineers as our objective. Here, “organic” means that the tool deals with complex relationships among different AI ethics and technologies. “Dynamic” means that the tool dynamically adopts new issues and helps engineers think in the contexts relevant to their project. We applied the ethical design theory to standardize the way of describing ethical and technical ideas in the same way. Then, we implemented a function to recommend ethical and technical scenarios according to each context of each engineer. Through our experimental cases, we confirmed that the tool can not only connect technical ideas with ethical ones, but also promote discovery of novel design solutions because it allowed users to reconsider design ideas from highest objectives. We confirmed that the tool is useful for humanities experts, too.

Keywords: AI Ethics, Design Theory, Creativity Support Tool, Discovery of Novel Design Solutions.
Estimation of Origin-Destination using Mobile Phone Call Data: A Case Study of Greater Dhaka, Bangladesh

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Abstract. The information regarding zonal interchange or origin-destination (OD) data plays vital role in planning of transport infrastructure. Traditionally these data are acquired based on household interview survey, roadside interview, socioeconomic attributes and census data which are costly in terms of money, time and logistics. This research is conducted to identify the substantial potential of mobile phone call data to estimate the population of each zone and estimate origin-destination trips between each zone as alternative for the traditional methods of collecting origin-destination data. This research is based on two different methods for estimating commuting trips, which are recurring trips between persons home location to work location, and sequential travel flow, which are combined form of work and non-work trips. Commuting trips-based OD are generated based on one-month aggregated data whereas, sequential travel flowbased OD is generated for daily or weekly temporal windows. Furthermore, an expansion factor is calculated to upscale the OD flows for each zone based on estimated home location of user and population census data. The results are compared and correlated with secondary household survey interview OD data, which concluded that frequent mobile phone can be used to estimate travel flow of large percentage of population more regularly and with reduced cost.

Keywords: Mobile Phone Call Data, Origin-Destination, Commuting Trips, Mobility.
Improving Plant Recognition using Hybrid features from Connectionist and Knowledge-Based Approaches

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Abstract. Many connectionist approaches get promising result but lack of knowledge. In this paper, we proposed architecture that combined knowledge-based approach to improve the accuracy of plant recognition. Towards this, hybrid features are constructed by merging three types of knowledge-based features; morphological feature, texture feature and color feature with convolutional neural network extracted features. Our architecture consists of three main stages which are data pre-processing, feature extraction and classification. Before features are extracted, images will be resized and augmented in the pre-processing stage. To classify the species of leaf, we consider decision tree and artificial neural network as a classifier. We experiment on two datasets; Flavia and Swedish dataset. The experimental result shows that the proposed architecture can predict unseen images correctly more than existing models.

Keywords: Plant recognition, Leaf classification, Knowledge based and Connectionist features, Decision tree, Artificial neural network.
A Study of the Relationship between Color Combinations Preferences of Consumer and their Sports Lifestyle based on AIO Lifestyle Scale

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Abstract. In this paper, based on Deng [4], Hui and Hutchinson (2010) research, their customers’ color combination preference model, further research on reason in what cause customers to have different color combination preferences. To assist company understanding their target market color combination preference. This research use lifestyle as an entry point, through researching on customers’ sports lifestyle and their color combination preferences to figure out the relationship between sports lifestyle and preferences. The research result shows that 1) Customers who pursuing fashion more prefer small and moderately distant color combination mainly prefer type B and type C. 2) Customers with low-key lifestyle like color pair with small distances that is type B. 3) The experiment results explanted that sensitive customers more prefer moderately distant color combination and small distances color combinations, which are type C and type B. 4) Customers who like fancy and special new goods are more prefer moderately distant color combination, which is type C. 5) Customers who love arts are more flexible person they like almost like every type of color combination. In conclusion, different lifestyle will cause customers have different color pair preference. In this case, type B related and types C distinct are most popular in customers.

Keywords: AIO Lifestyle Scale, Color Combination, Color Preference, CIELAB Color Space.
Participatory Event Type MONO-ZUKURI Education Effectiveness for Future Creativity

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Abstract. Automobile mechanics, who are automotive engineers, have important responsibilities to maintain vehicle safety as "the family doctor of the car." It is necessary for automobile mechanics to acquire a national qualification for second-class automobile mechanics. By remarkable changes in vehicle progress and working environments in the recent years, automobile mechanics must acquire not only maintenance skills but also "skills for troubleshooting," "ability to overview a whole vehicle," and "communication skills." It is desirable to acquire those abilities during one’s college days, but it is difficult to learn them using a traditional lecture style. "Participatory event type MONO-ZUKURI education," a project-based active learning process, is effective for acquiring all those capabilities together. As described herein, the authors describe educational practice of "the participatory event type MONO-ZUKURI education in Hokkaido” and its effectiveness.

Keywords: Automobile mechanics, Participatory event type MONO-ZUKURI education, Project-based active learning.
Exploring Effective Management Style for Creative Workers with Effect Size Analysis

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Abstract. This study explored the effective management style for creative workers through an internet questionnaire survey. A path model explaining workers’ performance with creativity, work environment and cultural tolerance was tested with correlation, regression and path analyses for creative and general workers. The results were compared to elucidate characteristics of creative workers, one of which was that creative workers’ “work environment was not ‘open’ and they tended to withdraw inside.” This is a novel finding since it conflicts with the generally accepted notion that creative workers are outgoing and need open environment. Note that effect size analysis was adopted for there was a large difference between the sizes of two groups. Although the analysis might be useful in the field of business studies where such difference is common, appropriate criteria for judging effect size in the filed should be established.

Keywords: Creative worker, Creative industry, Creativity, Management, Effect size analysis.
A Method for Online Discussion Design and Discussion Data Analysis

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Abstract. The final goal of our research has been conducting research and development on a large-scale consensus support system in which we will introduce automated facilitators by applying deep learning technology. The aim of this paper is to present how to design discussions on the online discussion system which is not consisted by explicit framework and how to process those discussion data as training data of deep learning for the development of automated facilitation system. As a first step to attain a consensus formation, it is necessary to design discussions constructively. In order to do so, participants’ opinions must be collected efficiently. The issue-based information system (IBIS) is a well-known efficient way to do this. In a discussion adopting the IBIS idea, participants can understand each other’s opinions clearly and propose their new ideas smoothly. It is possible to annotate the word data collected from online discussions with the constituent elements of IBIS. The annotated data is reusable as training data of deep learning and intended for application to other systems as open data. Based on above, we conducted an online discussion design experimental method and examined online discussion with applying IBIS idea. Our experiments proved that it is possible to extract IBIS elements in non-framed online discussions.

Keywords: Decision sciences, Decision support systems, Creative decision processes and interaction techniques, large-scale online discussion, issue based information system.
Abstract. Online discussion systems have recently attracted great attention as an enabling approach of realizing collective intelligence. During online discussions, human facilitators are introduced in order to help these discussions to proceed more efficiently and productively. However, there are a number of challenges such as human bias and time restriction that need to be solved in the human facilitator-based online discussion systems. As a result, automated facilitation becomes necessary in order to overcome these shortcomings. This paper proposes a novel approach for automated facilitation that utilizes case based reasoning (CBR) in order to imitate the human facilitator thinking style. The proposed approach works in issue based information system (IBIS) discussion style where complex problems are designed as a conversation amongst several stockholders. These stockholders, in turn, bring their expertise in order to resolve the discussion point. Experimental results show the ability of the proposed approach to improve the performance of online discussion systems, and to guide the online discussion towards consensus and towards gathering wisdom efficiently.

Keywords: Collective intelligence, Online discussion system, Automated facilitation, Issue based information systems, Casebased reasoning.
A Development of an Ontology-based Personalised Web from Rice Knowledge Website

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Abstract. This paper presents a method to modify static content-based website to a personalised web using an ontology as intermediary. Complex knowledge in the content-based website is engineered to ontology schema. With the ontology to represent knowledge schema, web pages are treated as instances to the categorical concepts. The properties in the ontology are to provide specification of textual details of the page. With a few simple initial questions, personal information is acquired to define relevant contents exclusively for individual user. In this work, the case study is a development of personalised rice farming content website. The developed personalised web is designed to filter relevant pages matched to user and to form a link between webpages following ontology schema for assisting tacit relation from the original site. The experiment shows that the personalised web performed better than the original in terms of ease of content navigation and providing relations of tacit knowledge level as users spent less time in query. Moreover, users were satisfied with the exclusive content for individual with the 4.43 satisfaction score in a scale in range of 1 to 5.

Keywords: Ontology; Personalised web; Instance Extraction, Rice farming.
Computational Thinking for Elementary School in Japan and Art Thinking

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Abstract. In 2016, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) established a council to organize education in the fields of logical thinking, imagination, problem solving and computer programming at the elementary school level. This began MEXT’s consideration of the relationship between programming education and problem solving ability. Discussion about programming education in elementary school has been ongoing. This paper reviews the discussion of the council, and considers computational thinking in comparison with the ideas of Art thinking as proposed by present author Ariga, and considers the impact of these on education.

Keywords: Creative worker, Creative industry, Creativity, Management, Effect size analysis.
A Method for Supporting Medical-interview Training using Smart Devices

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Abstract. In the case of medical schools in Japan, clinical training has been focused on lately. Giving such training, the trainer can only take a short time for each trainee. Moreover, the trainer has to provide one-to-one teaching for each trainee, so the number of classes for practical training in conducting medical interviews is not still enough. In addition, the number of physicians who can provide teaching is not enough. Therefore, classes in practical training become a burden on the trainer. In this paper, we proposed a method for supporting medical interview training, which is one kind of clinical training given in medical schools. The proposed method uses sensors and smart devices such as smart glasses and tablets. Its usefulness was demonstrated in experiments involving students and physicians at a medical school. The proposed method makes medical training more efficient, gives trainees more chances of conducting medical interviews, and alleviates the load on trainers.

Keywords: -
Jupiter: An Automated Negotiation Environment for Supporting Agents that Use Machine Learning

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Abstract. The purpose of this paper is to introduce Jupiter, a new environment for automated negotiation in which we can easily create agents that are able to use machine learning in order to extend their knowledge. Automated negotiation is one of the important solutions to coordinate amongst rational agents with conflicting interests. In the literature, previous efforts have been made in order to develop a platform that is able to simulate automated negotiations, i.e., Genius. In this regard, Genius provides an environment for automated negotiation that aims to solve multi-issue negotiation problems. In recent years, with the advancement of hardware technology, the development of machine learning algorithms has seen a remarkable growth. However, there is still few research that provides support for developing new negotiation environments, especially these environments that are able to support machine learning algorithms. In this paper, we propose Jupiter, a new automated negotiation environment in which we can easily create agents that are able to use machine learning in order to extend their knowledge. In addition, we compare Jupiter with Genius and show the performance gains of using Jupiter.

Keywords: Automated Negotiation, Genius, Stacked Alternating Offers Protocol, Multi-issue Negotiation, Machine Learning.
The Design of Meta-Strategy that Can Obtain Higher Negotiating Efficiency

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Abstract. Given the growing interest in automated negotiation, the search for effective strategies has produced a variety of different negotiation agents. In this regard, the Automated Negotiating Agents Competition (ANAC) is being held annually since 2010. The ANAC is an international competition that promotes researchers to design intelligent agents that are able to operate effectively in several kinds of scenarios. In this competition, researchers analyze the negotiating agents from several perspectives including utility, social welfare, distance to Nash solution, distance to Pareto efficiency and so on. Most of these analyses are based on the negotiation results. In fact, the efficiency of the negotiation process greatly affects the negotiation results. In our previous work, we introduced a metric that is able to evaluate the efficiency of the negotiation process. In this paper, we propose a novel meta-strategy that utilizes this metric in order to obtain higher negotiating efficiency.

Keywords: Automated Negotiation, Meta-strategy, Negotiation efficiency.
Author Index

A

Ahmed Moustafa 163, 164
Aimmanee, Pakinee 90, 144
Ando, Tomohiro 139
Angkarn Pukawanach 117
Anon Plangpraspochok 115
Araki, Kenji 134
Ariga, Minatsu 161
Aung, Cho Cherry 104
ayutthaya, Teerapong Pheungbun na 102
Ayutthaya, Thititorn Seneewong Na 108
Azzeh, Mohammad 72

B

Bhandari, Dinesh Mani 153
Boonkwan, Prachya 66, 74, 140
Buathang, Mingkamon 77
Buatoom, Uraiwan 143
Bulatovna, Jaxylykova Assel 79

C

Chaichinvara, Jirachaipat 76
Chaiwachirasak, Teerapat 68
Chai, Wasan Na 107
Chaiwongyen, Anuwat 82
Chakravarty, Debashish 70
chalothorn, Tawunrat 68
Cheosuwan, Thitirath 105
Chinda, Krisada 82
Chinnakotla, Manoj 88
Chinnungrueng, Jatuporn 62
Choi, Minsoo 65
Chotikakamthorn, Noppon 142
Chotika Luangorchorn 116
Chotivatunyu, Pitchaya 78
Chuangsuwanich, Ekapol 68
Chumuang, Narumol 103, 110

D

Dangsakul, Prachumpong 73
Das, Dipankar 69
Dey, Monalisa 69
Dillon, Pitisit 73
Dorji, Lhakpa 96
Duangpummet, Suradej 73
Du, Bo 129

F

Fujita, Katsuhide 127, 139
Fu, Kaiming 65
Fu, Lin 155
Furuhata, Takashi 133

G

Galajit, Kasorn 73, 90
Garda, Kevin 69
Gu, Wen 159

H

Hasegawa, Shinobu 124
Hashimoto, Kiyota 84, 91, 99
Hashiyama, Tomonori 121
Hemtong, Waratta 109
Higashide, Hiro 157
Hirokawa, Sachio 99
Hnoohom, Narit 76, 78, 93, 102
Hoppe, H. Ulrich 140
Horanont, Teerayut 96, 146
Hori, Koichi 152
Huachai, Panuwat 142
Hung, Nguyen Duy 146

I

Ikeda, Mitsuru 140
Inoue, Shunya 162
Intarauksorn, Mongkonchai 90
<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intha, Jakkaphob</td>
<td>73, 74</td>
</tr>
<tr>
<td>Ito, Takayuki</td>
<td>158, 159</td>
</tr>
<tr>
<td>Iwama, Daisuke</td>
<td>156</td>
</tr>
<tr>
<td>Jamsri, Pornsuree</td>
<td>141</td>
</tr>
<tr>
<td>Jeong, Chang-Sung</td>
<td>132</td>
</tr>
<tr>
<td>Jumpathong, Sawittree</td>
<td>74</td>
</tr>
<tr>
<td>Kadomatsu, Satoshi</td>
<td>131</td>
</tr>
<tr>
<td>Kaemarungsi, Kamol</td>
<td>82</td>
</tr>
<tr>
<td>Kalpiyapan, Varithdhorn</td>
<td>144</td>
</tr>
<tr>
<td>Kamineni, Avinash</td>
<td>88</td>
</tr>
<tr>
<td>Kaneko, Tomomi</td>
<td>156</td>
</tr>
<tr>
<td>Kang, Rihyei</td>
<td>157</td>
</tr>
<tr>
<td>Kaothanthong, Natsuda</td>
<td>67</td>
</tr>
<tr>
<td>Karnchanaran, Navapol</td>
<td>144</td>
</tr>
<tr>
<td>Karnjana, essada</td>
<td>80</td>
</tr>
<tr>
<td>Karnjana, Jessada</td>
<td>90, 97</td>
</tr>
<tr>
<td>Karn Yongsiriwit</td>
<td>113</td>
</tr>
<tr>
<td>Kato, Mitsuru</td>
<td>156</td>
</tr>
<tr>
<td>Kato, Yoshiharu</td>
<td>121</td>
</tr>
<tr>
<td>Keerativittayanun, Suthum</td>
<td>97</td>
</tr>
<tr>
<td>Ketcham, Mahasak</td>
<td>83, 89, 95, 98, 103, 110</td>
</tr>
<tr>
<td>Kewcharoenwong, Panitan</td>
<td>122</td>
</tr>
<tr>
<td>Kido, Akihiro</td>
<td>156</td>
</tr>
<tr>
<td>Klamsakul, Sopaporn</td>
<td>109</td>
</tr>
<tr>
<td>Kobayashi, Nobuyuki</td>
<td>138</td>
</tr>
<tr>
<td>Kodera, Yuki</td>
<td>162</td>
</tr>
<tr>
<td>Kohda, Youji</td>
<td>125</td>
</tr>
<tr>
<td>Koide, Minoru</td>
<td>126</td>
</tr>
<tr>
<td>Kondo, Toshiaki</td>
<td>145</td>
</tr>
<tr>
<td>Kongkachandra, Rachada</td>
<td>92, 94</td>
</tr>
<tr>
<td>Kongprawechnon, Waree</td>
<td>143, 145</td>
</tr>
<tr>
<td>Kosolsomnbat, Somkiet</td>
<td>83</td>
</tr>
<tr>
<td>Kotani, Kazunori</td>
<td>145</td>
</tr>
<tr>
<td>Kovavisaruch, La-or</td>
<td>62</td>
</tr>
<tr>
<td>Kovavisaruch, Laor</td>
<td>82</td>
</tr>
<tr>
<td>Kraisin, Somkheart</td>
<td>67</td>
</tr>
<tr>
<td>Kriengket, Kanyanut</td>
<td>74</td>
</tr>
<tr>
<td>Kulthamyothon, Peeraphon</td>
<td>142</td>
</tr>
<tr>
<td>Kumpuak, Tidanat</td>
<td>97</td>
</tr>
<tr>
<td>Kuri, Mio</td>
<td>127</td>
</tr>
<tr>
<td>Kyaw, Win Thuzar</td>
<td>81</td>
</tr>
<tr>
<td>Lapjaturapit, Theerapat</td>
<td>68</td>
</tr>
<tr>
<td>Leenoi, Dhanon</td>
<td>66</td>
</tr>
<tr>
<td>Lertpiya, Anuruth</td>
<td>68</td>
</tr>
<tr>
<td>Le, Tran Quynh</td>
<td>122</td>
</tr>
<tr>
<td>Liang, Ting-Wei</td>
<td>71</td>
</tr>
<tr>
<td>Lin, Lei</td>
<td>65</td>
</tr>
<tr>
<td>Li, Tao</td>
<td>65</td>
</tr>
<tr>
<td>Liu, Jiahui</td>
<td>136</td>
</tr>
<tr>
<td>Liu, Ting</td>
<td>135, 136</td>
</tr>
<tr>
<td>Lodhi, Vaibhav</td>
<td>61, 70</td>
</tr>
<tr>
<td>Lwin, Soe Soe</td>
<td>87</td>
</tr>
<tr>
<td>Maharattanamalai, Nattasit</td>
<td>68</td>
</tr>
<tr>
<td>Mahdi, Omar</td>
<td>72</td>
</tr>
<tr>
<td>Maiti, J.</td>
<td>61</td>
</tr>
<tr>
<td>Makhnov, Stanislav</td>
<td>144</td>
</tr>
<tr>
<td>Ma, Liangliang</td>
<td>130</td>
</tr>
<tr>
<td>Mardiyah, Widiatul</td>
<td>128</td>
</tr>
<tr>
<td>Marut Buranarach</td>
<td>117</td>
</tr>
<tr>
<td>Matsuo, Ryosuke</td>
<td>134</td>
</tr>
<tr>
<td>Matsuo, Tokuro</td>
<td>84</td>
</tr>
<tr>
<td>Meemongkolkiat, Nannapat</td>
<td>71</td>
</tr>
<tr>
<td>Mekruksavanich, Sakorn</td>
<td>105, 106</td>
</tr>
<tr>
<td>Mikifumi Shikida</td>
<td>162</td>
</tr>
<tr>
<td>Mitra, Pabitra</td>
<td>70</td>
</tr>
<tr>
<td>Miura, Motoki</td>
<td>119, 120</td>
</tr>
<tr>
<td>Miyachi, Taizo</td>
<td>133</td>
</tr>
<tr>
<td>Mondal, Anupam</td>
<td>69</td>
</tr>
<tr>
<td>Moodleah, Samart</td>
<td>141, 142</td>
</tr>
<tr>
<td>Moustafa, Ahmed</td>
<td>159</td>
</tr>
<tr>
<td>Muankid, Anchana</td>
<td>98</td>
</tr>
<tr>
<td>Nagai, Yukari</td>
<td>129, 131, 136, 155, 161</td>
</tr>
<tr>
<td>Nagpal, Sachit</td>
<td>69</td>
</tr>
<tr>
<td>Naiyapo, Wassana</td>
<td>150</td>
</tr>
</tbody>
</table>
Nakada, Yasuko 131
Nakajima, Hideharu 64
Nakazato, Narumi 125
Narupiyakul, Lalita 62
Nasir, Qassim 72
Nassif, Ali Bou 72
Neupane, Bipul 146
Nishida, Tomohiro 158
Nokkaew, Kwanrutai 92
Nurcahyo, Aldian 123
Nuttapon Sanglerdsinlapachai 116
Nwet, Khin Thandar 87

O
Okada, Makoto 91
Otani, Takafumi 138

P
Pak, Alexander 79
Pakpoom Chaisiriprasert 112
Paramet Tanwanont 115
Parkpoom Chaisiriprasert 113, 114
Pasupa, Kitsuchart 108
Pattama Krataithong 117
Pattarawadee Ruenjai 113
Phaphoom, Nattakarn 75
Phisek Pinpia 114
Phrombut, Charun 160
Pinthong, Thidarat 95
Piyaneeranart, Manussawee 89
Poolsukkho, Sanphet 94

Q
Qu, Jian 75

R
Rahman, Md. Mafizur 153
Rattanawong, Wanchai 147
Rianmora, Suchada 122
Roonsamrarn, Monnapat 101
Ruengrajitpakorn, Taneth 107, 160

S
Saengthongpattana, Kanchana 100
Sagisaka, Yoshinori 64, 81
Sagorika, Safinoor 124
Sangrit, Kittikom 97
Sangtong, Atichat 150
Sanpechuda, Taweesak 82
Sanzhar, Amirzhan 79
Sarkar, Sobhan 61
Sarunrak Janbradab 115
Sawanglok, Tanakon 86
Sekiguchi, Kaira 152
Seo, Youngkyung 132
Shahid, Waqar 141
Shibasaki, Ryosuke 153
Shiina, Hiromitsu 138
Shikida, Mikifumi 162
Shimogoori, Akio 161
Shrivastava, Manish 88
Shunya Inoue 162
Sinthawat Siwapornwesarut 112
Sirisup, Chainarong 85
Somchoke Ruengittinun 116, 117
Sommanawit, Benjaphan 154
Somyanonthanakul, Rachasak 101
Songmuang, Pokpong 85, 86, 148
Soonthornphisaj, Nuanwan 100
Suchaiporn, Veerapong 76
Sudo, Hiroki 137
Suksangaram, Wiwit 109
Sumargo, Bagus 128
Sun, Zhi 136
Supnithi, Thepchai 66, 74, 100, 107, 140, 160
Suroso, Jarot S. 123, 128
Suttichaya, Vasin 71
Suzuki, Atsuya 81

T
Takada, Kazuma 64
Takayuki Ito 164
Takhom, Akkharawoot 66
Takhomm, Akkharawoot 140
Talib, Manar Abu 72
Tanatipuknon, Asadang 80
Tangkongchitr, Pasit 77
Taniguchi, Masaya 137
Tano, Shun’ichi 121
Tanyaporn Kanignant 115
Thaiparmit, Sattarpoom 110, 112, 113, 114, 115, 116, 117
Thammachantuek, Ittikon 83
Thampairoj, Tananya 86
Theeramunkong, Thanaruk 101, 143, 154
Thein, Thin Lai Lai 104
Thiparpakul, Puwis 148
Tirasaroj, Nutchai 68
Tojo, Satoshi 137
Tomoya Fukui 163
Trainorapong, Pojchara 76
Truong, Anh Minh 149
Tungpimolrut, Kanokvate 145

U
Unoki, Masashi 90
Unsuwan, Thanavit 77
Usananavasin, Sasiporn 140

V
Vasuaninchita, Mode 147
Vasupongayya, Sangsuree 151
Vejjanugraha, Pikul 145
Vongmanee, Varin 147

W
Wang, Jian 65
Wang, Manqian 129
Wangtragulsang, Chinorot 75
Wang, Zhisheng 136
Wichienchai, Wichaya 148
Wiratsin, Inon 76
Wisadsud, Sodsai 82
Witayangkurn, Apichon 153

Wongchaisuwat, Papis 63
Wongpatikasere, Konlakorn 62, 77, 93, 102
Wongsakittirak, Sakchai 144
Wongsatho, Thitipong 82

X
Xun Tang 164

Y
Yagi, Kunimasa 162
Yamaguchi, Naoko 158
Yanagaimoto, Hidekazu 84
Yanagimoto, Hidekazu 91
Yarnadhis Poolsawat 117
Yenala, Harish 88
Yimyam, Worawut 95
Yoshitaka, Atsuo 149
Yuenyong, Sumeth 78, 93, 102
Yuizono, Takaya 130, 135
Yuki Kodera 162
Yu, Shu 130

Z
Zaw, San Kyaw 151
Zhang, Minjie 159
Zou, Nianyu 136
Conference Venue

Pullman Pattaya Hotel G
You can dream or you can live your dreams at Pullman Pattaya Hotel G, a culmination of traditional Thai and cutting-edge designs suited for every lifestyle. Nestled away in a lush landscape with serene tropical gardens and private Beach Club. Pattaya discovery starts here at the newly renovated Pullman Pattaya Hotel G. Pullman Pattaya Hotel G offers a cozy, welcoming and trendy decor. Rooms are equipped with state-of-the-art technology, spacious living space, unique bathroom amenities, free WIFI and more. The hotel features 353 newly renovated rooms with private balconies and stunning sea views.

Address
445/3 Moo 5 Wong Amart Beach Pattaya - Naklua Road Soi 16, 20150 Chonburi, Thailand (Latitude in Decimal is 12.962835, 100.886169)

Website
http://www.pullmanpattayahotelg.com
BY CAR:
Take the Bangkok-Chonburi motorway until it merger with Sukhumvit Road. Continue south until reaching the North Pattaya Road intersection. Turn right at the intersection to the Dolphin Roundabout, where you turn right and head north along Pattaya-Naklua Road. Turn left at Soi Naklua 18 and then right as indicated on map. The resort will be on your left. Total distance / time: 140 km / 1.5 hrs.

BY BUS:
Take the bus to Pattaya at the Ekkamai (Eastern) Bus Terminal, located next to BTS Ekkamai station. Disembark at the Bus Terminal located on North Pattaya Road. From there, a songtaew taxi can be hired to bring you to the resort.

HOW TO REACH PULLMAN PATTAYA HOTEL G (NORTH PATTAYA)

GPS Coordinates: 12°57'44.14"N, 100°53'05.42"E

Hotel Map
iSAI-NLP/KICSS 2018 was organized by Artificial Intelligence Association of Thailand (AIAT, Thailand), Sirindhorn International Institute of Technology, Thammasat University (SIIT, TU, Thailand), Mahidol University (MU, Thailand), National Electronics and Computer Technology Center (NECTEC, Thailand), Japan Advanced Institute of Science and Technology (JAIST, Japan), and Burapha University (BUU, Thailand),
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