

IEA/AIE 2020

The 33th International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems

Conference Program

Sept. 22(TUE)-25(FRI), 2020

Kitakyushu, Japan

<https://jsasaki3.wixsite.com/ieaaie2020>

NOTE

Due to the influence of COVIT-19, IEA/AIE 2020 will be held at the same time as other international conferences SOMET 2020.

<https://jsasaki3.wixsite.com/somet2020>

Part of the program overlaps. Most of speaker will use Zoom from a remote location. It doesn't matter which one you participate in if you wish.

Time of all presentation is 25 minutes for a paper + 5 for questions.

All times indicate Japan standard time (JST). If you attend a web conference in your place, please convert to your local time.

Sept. 22, Tuesday

< Room A: Room 22 (2nd Floor)>

Japan standard time (JST) AM 9:00-16:00 REGISTRATION

Session Chair: Prof. Hamido Fujita

9:30-9:55 Opening

10:30-11:30 Keynote Speech I (IEA/AIE 2020)

“Intelligence, Wisdom and Enjoyment Practice and Exploration of Intelligent Telemedicine Robot Based on “Human in the Loop”

By Prof. Tao Wu

AM 11:30-11:40 COFFEE BREAK

Session Chair: Prof. Hamido Fujita

11:40-12:40 Keynote Speech II (IEA/AIE 2020)

"AI and Data Science Research for Social Good: Challenges and Opportunities"

By Prof. Ee-Peng Lim

PM 12:40-13:40 LUNCH

< Room A: Room 22 (2nd Floor)>

Session Chair: Dr. Yung-Chun Chang

Natural Language Processing

13:40-14:10 (Full paper #13)

Question Generation through Transfer Learning

Yin-Hsiang Liao and Jia-Ling Koh

14:10-14:40 (Full paper #24)

KIDER: Knowledge-Infused Document Embedding Representation for Text Categorization

Yu-Ting Chen, Zheng-Wen Lin, Yung-Chun Chang and Wen-Lian Hsu

14:40-15:10 (Full paper #44)

Discriminative Features Fusion with BERT for Social Sentiment Analysis

Duy-Duc Le Nguyen, Yen-Chun Huang, Yung-Chun Chang

15:10-15:40 (Full paper #45)

Text Sentiment Transfer Methods by Using Sentence Keywords

Shengwei Hu, Bicheng Li, Kongjie Lin, Rui Wang and Kai Liu

PM 15:40-16:00 COFFEE BREAK

Session Chair: Dr. Louise Travé-Massuyès

System Control, Classification, and Fault Diagnosis

16:00-16:30 (Short paper #76)

Development and Research of a Terminal Controller for Marine Robots

V. Pshikhopov and Boris Gurenko

16:30-17:00 (Short paper #73)

A Machine Learning Approach for Classifying Movement Styles based on UHF-RFID Detections

Cristoph Uran, Markus Prosegger, Sebastian Vock and Helmut Wollik

17:00-17:30 (Full paper #93)

Process decomposition and test selection for distributed fault diagnosis

Elodie Chantryer, Anna Sztzyber, Louise Travé-Massuyès and Carlos Gustavo Pérez-Zuniga

17:30-18:00 (Short paper #68)

Managing situations with high number of elements in Group Decision Making

J. A. Morente-Molinera and S. Alonso, S. Rios-Aguilar and R. Gonzalez and E. Herrera-Viedma

< Room B: Room 21 North (2nd Floor)>

Session Chair: Prof. Dinh Tuyen Hoan

Innovative Applications of Intelligent Systems

13:40-14:10 (Short paper #51)

Mathematical Expression Retrieval in PDFs from the Web Using Mathematical Term Queries
Kuniko Yamada and Harumi Murakami

14:10-14:40 (Full paper #59)

A Model for Predicting Terrorist Network Lethality and Cohesiveness
Botambu Collins, Dinh Tuyen Hoang and Dosam Hwang

14:40-15:10 (Full paper #71)

S2RSCS: An Efficient Scientific Submission Recommendation System for Computer Science
Son T. Huynh, Phong T. Huynh, Dac H. Nguyen, Dinh V. Cuong and Binh T. Nguyen

15:10-15:40 (Full paper #20)

Improved grey model by dragonfly algorithm for Chinese tourism demand forecasting
Jinran Wu and Zhe Ding

PM 15:40-16:00 COFFEE BREAK

Session Chair: Prof. Franz Wotawa

Machine Learning

16:00-16:30 (Short paper #112)

Integer Weighted Regression Tsetlin Machines
Kuruge Darshana Abeyrathna, Ole-Christoffer Granmo and Morten Goodwin

16:30-17:00 (Full paper #114)

Increasing the Inference and Learning Speed of Tsetlin Machines with Clause Indexing
Saeed Rahimi Gorji, Ole-Christoffer Granmo, Sondre Glimsdal, Jonathan Edwards and Morten Goodwin

17:00-17:30 (Full paper #9)

Constrained Evolutionary Piecemeal Training to Design Convolutional Neural Networks
Dolly Sapra and Andy D. Pimentel

Industrial Applications

17:30-18:00 (Full paper #18)

Machine Learning for Water Supply Supervision
Thomas Schranz, Gerald Schweiger, Siegfried Pabst and Franz Wotawa

18:00-18:10 Paper Award Ceremony (1)

Sept. 23, Wednesday

< Room A: Room 22 (2nd Floor)>

Japan standard time (JST) AM 9:00-16:00 REGISTRATION

Session Chair: Dr. John Anderson

Robotics and Drones

9:30-10:00 (Full paper #41)

Push Recovery and Active Balancing for Inexpensive Humanoid Robots Using RL and DRL
Amirhossein Hosseinmemar, John Anderson, Jacky Baltes, Meng Cheng Lau and Ziang Wang

10:00-10:30 (Short paper #58)

Optimal Control Problem of a Differential Drive Robot
Luis F. Recalde, Bryan S. Guevara, Giovanni Cuzco and Victor H. Andaluz

10:30-11:00 (Full paper #83)

Optimal Trajectory Tracking Control for a UAV Based on Linearized Dynamic Error
Christian P. Carvajal, Víctor H. Andaluz, Flavio Roberti and Ricardo Carelli

AM 11:10-11:20 COFFEE BREAK

Session Chair: Dr. Yun-Cheng Tsai

Financial Applications and Blockchain

11:20-11:50 (Short paper #31)

Deep Reinforcement Learning for Foreign Exchange Trading
Yun-Cheng Tsai, Chun-Chieh Wang, Fu-Min Szu and Kuan-Jen Wang

11:50-12:20 (Full paper #66)

Reinforcement Learning based Real-Time Pricing in Open Cloud Markets
Pankaj Mishra, Ahmed Moustafa and Takayuki Ito

Data Management and Data Clustering

12:20-12:50 (Full paper #98)

Applying Cluster-based Zero-shot Classifier to Data Imbalance Problems
Toshitaka Hayashi, Kotaro Ambai and Hamido Fujita

PM 12:50-14:10 LUNCH

Session Chair: Prof. Hamido Fujita

14:10-15:10 Keynote Speech III (SOMET 2020)

“Joint Optimization of Depth and Ego-Motion for Visual SLAM”
By *Prof. Dr. Zhijun Fang*

15:10-16:10 Keynote Speech IV (IEA/AIE and SOMET 2020)

“On use of Sentiment Analysis in Group Decision Making”
by *Enrique Herrera Viedma*

PM 16:10-16:30 COFFEE BREAK

IEA/AIE Poster Session

Session Chair: Prof. Jun Sasaki

16:30-16:37 (Poster Paper #37)

A multi-agent model for countering terrorism

Oussama Kebir, Issam Nouaouri, Mouna Kebir and Lamjed Ben Said

16:37-16:44 (Poster Paper #43)

Recognition and Generation of Drawing Figures Using Neurodynamical Model Considering Pen

Yusuke Kubono, Shun Nishide, Xin Kang and Fuji Ren

16:44-16:51 (Poster Paper #72)

DFS2P: An Efficient Deduplication Framework For SaaS Platforms

Thanh Binh Nguyen, Quy Nguyen and Huu Dac Nguyen

16:51-16:58 (Poster Paper #82)

Opinion Mining Classifier for Jordanian Dialect

Said A Salloum, Khaled Shaalan, Ahmed Khamees and Hani Hejazi

16:58-17:05 (Poster Paper #86)

The Potential of Machine Learning Techniques to Predict the Students' Performances Based on Big Data of Students' Information

Afiqah Zahirah Zakaria, Ali Selamat and Ondrej Krejcar

17:05-17:12 (Poster Paper #88)

Research on Deep Reinforcement Learning-based Top-N Recommendation

Bo Huang

17:12-17:19 (Poster Paper #91)

Stock Portfolio Management with Deep Reinforcement Learning Methods

Ping Yang and Xing Wu

17:19-17:26 (Poster Paper #96)

The time Efficient Centralization Measure for Social Networks Assessment,

Rafał Palak and Krystian Wojtkiewicz

17:26-17:33 (Poster Paper #102)

Empirical Study of K-means Clustering on Usability Performance Metrics in MAR-learning

Kok Cheng Lim, Ali Selamat, Mohd Hazli Mohamed Zabil, Md Hafiz Selamat, Rose Alinda Alias, Fatimah Puteh, Farhan Mohamed and Ondrej Krejcar

17:30-17:40 Paper Award Ceremony (3)

PM 18:30-21:00 BANQUET (it will be announced on site)

< Room B: Room 21 North (2nd Floor)>

Session Chair: Dr. Lijun Wei

Innovative Applications of Intelligent Systems

9:30-10:00 (Full paper #57)

Automatic Identification of Account Sharing For Video Streaming Services

Wei Zhang and Chris Challis

Industrial Applications

10:00-10:30 (Short paper #63)

A heuristic approach to the three dimensional strip packing problem considering practical constraints

Qiang Liu, Dehao Lin, Hao Zhang and Lijun Wei

10:30-11:00 (Full paper #61)

A heuristic for the two-dimensional irregular bin packing problem with limited rotations

Qiang Liu, Jiawei Zeng, Hao Zhang and Lijun Wei

11:00-11:10 Paper Award Ceremony (2)

AM 11:10-11:20 COFFEE BREAK

Session Chair: Dr. Lijun Wei

Industrial Applications

11:20-11:50 (Full paper #16)

Using Deep Learning Techniques to Detect Rice Diseases from Images of Rice Fields

Kantip Kiratiratanapruk, Pitchayagan Temniranrat, Apichon Kitvimonrat, Wasin Sinthupinyo and Sujin Patarapuwadol

11:50-12:20 (Full paper #62)

An enhanced whale optimization algorithm for the two-dimensional irregular strip packing problem

Qiang Liu, Zehui Huang, Hao Zhang and Lijun Wei

Machine Learning

12:20-12:50 (Full paper #87)

Enriching the semantics of temporal relations for temporal pattern mining

Ryosuke Matsuo, Tomoyoshi Yamazaki, Muneo Kushima and Kenji Araki

PM 18:30-21:00 BANQUET (it will be announced on site)

Sept. 24, Thursday

< Room A: Room 22 (2nd Floor)>

Japan standard time (JST) AM 9:00-16:00 REGISTRATION

Session Chair: Prof. Dinh Tuyen Hoan

Social Network Analysis

9:30-10:00 (Full paper #32)

Integrating Crowdsourcing and Active Learning for Classification of Work-Life Events from Tweets

Yunpeng Zhao, Mattia Prosperi, Tianchen Lyu, Yi Guo, Le Zhou and Jiang Bian

10:00-10:30 (Short paper #4)

Self-Understanding Support Tool using Twitter Sentiment Analysis

Harumi Murakami, Naoya Ejima and Naoto Kumagai

10:30-11:00 (Full paper #107)

Many-to-One Stable Matching for Prediction in Social Networks

Ke Dong, Zengchang Qin and Tao Wan

AM 11:00-11:20 COFFEE BREAK

Session Chair: Prof. Dinh Tuyen Hoan

Social Network Analysis

11:20-11:50 (Full paper #39)

A Framework for Detecting User's Psychological Tendencies on Twitter Based on Tweets Sentiment Analysis

Huyen Trang Phan, Van Cuong Tran, Ngoc Thanh Nguyen and Dosam Hwang

11:50-12:20 (Full paper #109)

Automatic Fake News Detection by Exploiting User's Assessments on Social Networks: A Case Study of Twitter

Van Cuong Tran, Van Du Nguyen and Ngoc Thanh Nguyen

PM 12:30-13:40 LUNCH

Session Chair: Dr. Khin Nandar Win

Decision-Support and Agent-Based Systems

13:40-14:10 (Full paper #29)

New Approach to Determine 2-Optimality Consensus for Collectives

Dai Tho Dang, Zygmunt Mazur and Dosam Hwang

14:10-14:40 (Short paper #97)

A Decision Support System to Provide Criminal Pattern Based Suggestions to Travelers

Khin Nandar Win, Jianguo Chen, Mingxing Duan, Guoqing Xiao, Kenli Li, Philippe Fournier-Viger and Kenqi Li

Financial Applications and Blockchain

14:40-15:10 (Full paper #8)

Security of Blockchain Distributed Ledger Consensus Mechanism in Context of the Sybil Attack

Michal Kedziora, Patryk Kozlowski and Piotr Jozwiak

PM 15:20-15:30 COFFEE BREAK

Session Chair: Prof. Peter Struss

Financial Applications and Blockchain

15:30-16:00 (Full paper #48)

Human-Centred Automated Reasoning for Regulatory Reporting via Knowledge-Driven Computing

Dilhan J. Thilakarathne, Newres Al Haider and Joost Bosman

Decision-Support and Agent-Based Systems

16:00-16:30 (Full paper #55)

Action-Based Programming with YAGI - An Update on Usability and Performance

Thomas Eckstein and Gerald Steinbauer

16:30-17:00 (Full paper #90)

Model-based Decision Support Systems -Conceptualization and General Architecture

Peter Struss

Data Management and Data Clustering

17:00-17:30 (Full paper #92)

A Quality Assessment Tool for Koblenz Datasets using Metrics-Driven Approach

Szymon Pucher and Dariusz Krol

< Room B: Room 21 North (2nd Floor)>

Session Chair: Dr. Víctor H. Andaluz

Robotics and Drones

9:30-10:00 (Full paper #106)

Non-Linear Control of Aerial Manipulator Robots Based on Numerical Methods

David F. Grijalva, Jaime A. Alegría, Víctor H. Andaluz and Cesar Naranjo

10:00-10:30 (Short paper #111)

Non-linear 3D Visual Control for an Unmanned Aerial Vehicle

Daniel D. Guevara and Víctor H. Andaluz

10:30-11:00 (Short paper #104)

Construction and Control Aerial Manipulator Robot

Steeven J. Loor, Alan R. Bejarano, Franklin M. Silva and Víctor H. Andaluz

AM 11:00-11:20 COFFEE BREAK

Medical and Health-related Applications

11:20-11:50 (Full paper #34)

A New Integer Linear Programming Formulation to the Inverse QSAR/QSPR for Acyclic Chemical Compounds Using Skeleton Trees

Fan Zhang, Jianshen Zhu, Rachaya Chiewvanichakorn, Aleksandar Shurbevski, Hiroshi Nagamochi and Tatsuya Akutsu

11:50-12:20 (Full paper #75)

Computing a weighted Jaccard index of electronic medical record for disease prediction

Chia-Hui Huang, Yun-Te Liao, David Taniar and Tun-Wen Pai

12:20-12:30 Paper Award Ceremony (4)

PM 12:30-13:40 LUNCH

Session Chair: Dr. Mustafa Elattar

Medical and Health-related Applications

13:40-14:10 (Full paper #80)

The differential feature detection and the clustering analysis to breast cancers

Juanying Xie, Zhaozhong Wu, Qin Xia, Lijuan Ding and Hamido Fujita

14:10-14:40 (Full paper #38)

Clustering-based data reduction approach to speed up SVM in classification and regression tasks

Adamo Santana, Souta Inoue, Kenya Murakami, Tatsuya Iizaka and Tetsuro Matsui

14:40-15:10 (Short paper #95)

Left Ventricle Segmentation Using Scale-Independent Multi-Gate UNET in MRI Images

Mina Saber, Dina Abdelrauof and Mustafa Elattar

PM 15:10-15:30 COFFEE BREAK

Session Chair: Prof. Peter Struss

Medical and Health-related Applications

15:30-16:00 (Full paper #105)

AI for Health – Knowledge-based Generation of Tailormade Exercise Plans

Florian Grigolet, Peter Struss and Florian Kreuzpointner

Knowledge Based Systems

16:00-16:30 (Full paper #15)

ConMerge – Arbitration of Constraint-Based Knowledge Bases

Mathias Uta and Alexander Felfernig

16:30-17:00 (Full paper #22)

A Systematic Model to Model Transformation for Knowledge-Based Planning Generation Problems

Liwen Zhang, Franck Fontanili, Elyes Lamine, Christophe Bortolaso, Mustapha Derras and Hervé Pingaud

Robotics and Drones

17:00-17:30 (Full paper #1)

Path Planning of Mobile Robot Group Based on Neural Networks

Mikhail Medvedev and Viacheslav Pshikhopov

< Room C: Room 21 South (2nd Floor)>

Session Chair: Dr. Matamoros Andres

Machine Learning

9:30-10:00 (Full paper #11)

Hierarchical Learning of Primitives Using Neurodynamic Model

Fusei Nomoto, Tadayoshi Yasuda, Shun Nishide, Xin Kang and Fuji Ren

10:00-10:30 (Full paper #33)

Compressing and Interpreting SOM-Based Convolutional Neural Networks

Ryotaro Kamimura

10:30-11:00 (Full paper #85)

Colored Petri Net Modeling for Prediction Processes in Machine Learning
Machine Learning

Ibuki Kawamitsu and Morikazu Nakamura

AM 11:00-11:20 COFFEE BREAK

Industrial Applications

11:20-11:50 (Full paper #IKEDS-5)

Faster R-CNN Based Fault Detection in Industrial Images

Faisal Saeed, Anand Paul and Seungmin Rho

Pattern Mining

11:50-12:20 (Full paper #IKEDS-4)

TKE: Mining Top-K Frequent Episodes

Philippe Fournier-Viger, Yanjun Yang, Peng Yang, Jerry Chun-Wei Lin and Unil Yun

PM 12:30-13:40 LUNCH

Session Chair: Prof. Jimmy Ming-Tai Wu

Pattern Mining

13:40-14:10 (Full paper #IKEDS-7)
TKU-CE: Cross-Entropy Method for Mining Top-K High Utility Itemsets
Wei Song, Lu Liu and Chaomin Huang

14:10-14:40 (Full paper #IKEDS-8)
Mining Cross-Level High Utility Itemsets
Philippe Fournier-Viger, Ying Wang, Jerry Chun-Wei Lin, Jose Maria Luna and Sebastian Ventura

14:40-15:10 (Full paper #IKEDS-12)
Maintenance of Prelarge High Average-Utility Patterns in Incremental Databases
Jimmy Ming-Tai Wu, Qian Teng, Jerry Chun-Wei Lin, Philippe Fournier-Viger and Chien-Fu Cheng

PM 15:10-15:30 COFFEE BREAK

Session Chair: Prof. Jerry Chun-Wei Lin

Pattern Mining

15:30-16:00 (Full paper #IKEDS-11)
Efficient Mining of Pareto-front High Expected Utility Patterns
Usman Ahmed, Jerry Chun-Wei Lin, Jimmy Ming-Tai Wu, Youcef Djenouri, Gautam Srivastava and Suresh Kumar Mukhiya

Industrial Applications

16:00-16:30 (Short paper #36)
Estimation of Cable Lines Insulating Materials Resource Using Multistage Neural Network Forecasting Method
Nikolay K. Poluyanovich, Mikhail Yu Medvedev, Marina N. Dubyago, Nikolay V. Azarov and Alexander V. Ogrenichev

Networking Applications

16:30-17:00 (Full paper #19)
User Grouping and Power Allocation in NOMA Systems: A Reinforcement Learning-Based Solution
Rebekka Olsson Omslandseter, Lei Jiao, Yuanwei Liu and B. John Oommen

17:00-17:30 (Full paper #56)
Deep Learning for QoS-Aware Resource Allocation in Cognitive Radio Networks
Jerzy Martyna

Sept. 25, Friday

< Room A: Room 22 (2nd Floor)>

Japan standard time (JST) AM 9:00-12:00 REGISTRATION

Session Chair: Dr. Geoff Harris

Decision-Support and Agent-Based Systems

9:30-10:00 (Full paper #49)
Consensus-Based Protocol for Distributed Exploration and Mapping
Zilong Jiao and Jae Oh

10:00-10:30 (Full paper #50)
A Real-Time Actor-Critic Architecture for Continuous Control
Zilong Jiao and Jae Oh

Innovative Applications of Intelligent Systems

10:30-11:00 (Full paper #69)
Variable Transformation to a 2x2 domain space for Edge Matching Puzzles
*Thomas Aspinall, Adrian Gepp, **Geoff Harris** and Bruce James Vanstone*

AM 11:00-11:20 COFFEE BREAK

Session Chair: Prof. R. Uday Kiran

Pattern Mining

11:20-11:50 (Full paper #84)
Parallel Mining of Partial Periodic Itemsets in Big Data
*C. Saideep, **R. Uday Kiran**, Koji Zettsu, Cheng-Wei Wu, P. Krishna Reddy, Masashi Toyoda and Masaru Kitsuregawa*

11:50-12:20 (Full paper #103)
A Fast Algorithm for Mining Closed Inter-Transaction Patterns
Thanh-Ngo Nguyen, Loan T.T. Nguyen, Bay Vo and Ngoc-Thanh Nguyen

PM 12:20-13:40 LUNCH

Session Chair: Dr. Louise Travé-Massuyès

Anomaly Detection and Automated Diagnosis

13:40-14:10 (Full paper #47)
A Multi-phase Iterative Approach for Anomaly Detection and its Agnostic Evaluation
*Kévin Ducharlet, **Louise Travé-Massuyès**, Marie-Véronique Le Lann and Youssef Miloudi*

14:10-14:40 (Full paper #79)
On the Use of Answer Set Programming for Model-based Diagnosis
Franz Wotawa

15:10-15:30 Closing

< Room D: Room 32 (3rd Floor)>

Session Chair: Prof. Philippe Fournier-Viger

Data Management and Data Clustering

9:30-10:00 (Full paper #IKEDS-2)
Determining Sufficient Volume of Data For Analysis With Statistical Framework
Tanvi Barot, Gautam Srivastava and Vijay Mago

10:00-10:30 (Full paper #IKEDS-3)
A Fuzzy Crow Search Algorithm for Solving Data Clustering Problem
Ze-Xue Wu, Ko-Wei Huang and Chu-Sing Yang

10:30-11:00 (Full paper #IKEDS-6)
Distributed Density Peak Clustering of Trajectory Data on Spark
*Yunhong Zheng, Xinzheng Niu, **Philippe Fournier-Viger** and Fan Li and Lin Gao*

AM 11:00-11:20 COFFEE BREAK

Session Chair: Prof. Philippe Fournier-Viger

Multimedia Applications

11:20-11:50(Full paper #12)
Generation of Musical Scores from Chord Sequences using Neurodynamic Model
Koji Masago, Mizuho Amo, Shun Nishide, Xin Kang and Fuji Ren

11:50-12:20 (Full paper #67)
Driver License Field Detection using Real-Time Deep Networks
Chun-Ming Tsai, Jun-Wei Hsieh, Ming-Ching Chang and Yu-Chen Lin

PM 12:20-13:40 LUNCH

Session Chair: Dr. Marek Kopel

Multimedia Applications

13:40-14:10 (Full paper #10)
Calibration of a Microphone Array Based on a Probabilistic Model of Microphone Positions
Katsuhiko Dan, Katsutoshi Itoyama, Kenji Nishida and Kazuhiro Nakadai

14:10-14:40 (Full paper #6)
How to handle head collisions in VR
Marek Kopel and *Bartłomiej Stanasiuk*

14:40-15:10 (Full paper #26)
Improving Variational Mode Decomposition-based signal enhancement with the use of Total Variation Denoising
Krzysztof Brzostowski and Jerzy Swiatek