

# Program of IFSA-SCIS2017

18:30-20:00, Tuesday 27, Meeting Hall, Reception

9:00-9:20, Wednesday 28, Piazza Hall, Welcome Address

9:20-10:20, Wednesday 28, Piazza Hall, Plenary Talk 1

- **Pre-Aggregation Functions: Theory and Applications in Classification and Image Processing**

Humberto Bustince

10:40-12:00, Wednesday 28, Room 203, SS-02-1 Uncertainty Handling in Recommender and Decision Support Systems

- **Uncertain Information Fusion and Knowledge Integration: How to Take Reliability into Account (ID: 7)**

Hung Nguyen, Kittawit Autchariyapanitkul, Olga Kosheleva and Vladik Kreinovich

- **Graded Associations in Situation Awareness (ID: 68)**

Trevor Martin and Ben Azvine

- **An Interval Type-2 Fuzzy Model for Review Topic based Recommendation (ID: 73)**

Yue Ma, Guoqing Chen and Qiang Wei

- **Probabilistic Argumentation with DST evidence (ID: 79)**

Nguyen Duy Hung

10:40-12:00, Wednesday 28, Room 204, SS-13-1 Image Processing and Computer Vision using Fuzzy Techniques

- **A fast edge detection model combining mixed  $L_1$  and  $L_2$  fidelity terms (ID: 11)**

Xiaole Zhang, Yilin Li, Yuying Shi, Zhenbing Zhao and Junfeng Xin

- **Automatic License Plate Recognition in Difficult Conditions - Technical Report (ID: 51)**

Petr Hurtik and Marek Vajgl

- **Single Frame Super Resolution using Bilateral Filter (ID: 92)**

Koji Kita, Michifumi Yoshioka and Katsufumi Inoue

- **Hyperspectrum comparison using similarity measures** (ID: 156)  
Carlos Lopez-Molina, Cédric Marco-Detchart, Humberto Bustince, Javier Fernandez, Ainara Lopez-Maestresalas and Daniela Ayala-Martini

## **10:40-12:00, Wednesday 28, Room 205, SS-04-1 Fuzzy and Intelligent Systems**

- **Positivstellensatz Relaxation for Sum-of-Squares Stabilization Conditions of Polynomial Fuzzy Systems** (ID: 9)  
Alissa Ullly Ashar, Motoyasu Tanaka and Kazuo Tanaka
- **Online System Identification Based on a State-Space Neuro-Fuzzy System** (ID: 14)  
Paulo Gil, Tiago Oliveira and Luís Palma
- **Stability Analysis for Polynomial Fuzzy Systems Based on Line-Integral Fuzzy Lyapunov Function: A Copositive Relaxation Approach** (ID: 16)  
Jairo Moreno Saenz, Motoyasu Tanaka and Kazuo Tanaka
- **Cooperative adaptive fuzzy tracking control for a class of nonlinear multi-agent systems** (ID: 31)  
Fahimeh Baghbani, M.-R. Akbarzadeh-T. and M.-B. Naghibi Sistani

## **10:40-12:00, Wednesday 28, Room 206, SS-32-1 Brain Engineering for Soft Behavior**

- **Spatiotemporal Human Brain Activities on Recalling Tetrapod and Fruit Names** (ID: 140)  
Koji Sugimoto, Takahiro Yamanoi, Hisashi Toyoshima, Mika Otsuki, Shin-Ichi Ohnishi and Toshimasa Yamazaki
- **Basic Verification of The Brain Areas Related with The Time Measurement to Use BCI** (ID: 149)  
Ryosuke Hayasaka, Keita Mitani and Yukinobu Hoshino
- **Analysis of transition and reproducibility of spontaneous electrical activity pattern in a living neural network** (ID: 153)  
Takumi Okada, Wataru Minoshima and Suguru N Kudoh
- **Identification of multiple-tasks-induced-EEG by heuristic BCI with learning type Fuzzy-Template-Matching method** (ID: 157)  
Teruo Oda and Suguru Kudoh

## **10:40-12:00, Wednesday 28, Room 207, SS-12 Probability with Fuzziness and Statistical Applications**

- **Construction of Fuzzy Multiple Deferred State Sampling Plan** (ID: 17)  
Robab Afshari and Bahram Sadeghpour Gildeh
- **Knowledge processes under fuzziness and uncertainty** (ID: 139)  
Giulianella Coletti and Barbara Vantaggi
- **Interval-Valued Risk Measure Models and Empirical Analysis** (ID: 195)  
Zihe Li, Jinping Zhang and Xiaoying Wang

### **10:40-12:00, Wednesday 28, Room 302, SS-17 Intelligent Robotics and Application for Healthcare**

- **Weather forecast support system implemented into robot partner for supporting elderly people using Fuzzy logic** (ID: 23)  
Julia Szeles, Naoyuki Kubota and Jinseok Woo
- **Fuzzy Echo State Network for Heartbeat Detection using Ultrasensitive Vibration Sensor** (ID: 100)  
Takenori Obo, Toshiyuki Sawayama, Takuya Sawayama and Naoyuki Kubota
- **Fuzzy Wall-Following Control of A Wheelchair** (ID: 103)  
Ya-Ting Lee, Chian-Song Chiu and I-Tung Kuo
- **Optimizing FELM Ensembles using GA-BIC** (ID: 205)  
Wei Shiung Liew, Chu-Kiong Loo and Takenori Obo

### **10:40-12:00, Wednesday 28, Room 303, SS-21 Uncertain Dynamic State Estimation**

- **Real-time Whole Body Imitation by Humanoid Robot based on Particle Filter and Dimension Reduction by Autoencoder** (ID: 72)  
Yo Kondo and Yasutake Takahashi
- **Kriging-based prediction and interpolation for modeling pedestrian dynamics** (ID: 162)  
Kazuhiko Kawamoto, Yoshiyuki Tomura and Kazushi Okamoto
- **Stochastic Model on Low Resolution Characters and the Feature of Topological Invariant** (ID: 213)  
Takeshi Matsuda
- **FML-based Prediction Agent and Its Application to Game of Go** (ID: 232)  
Chang-Shing Lee, Mei-Hui Wang, Chia-Hsiu Kao, Sheng-Chi Yang, Yusuke Nojima, Ryosuke Saga, Nan Shuo and Naoyuki Kubota

### **10:40-12:00, Wednesday 28, Room 304, P-1 Theory 1**

- **New trends on aggregation of finite fuzzy sets** (ID: 245)

María Jesús Campión, Raquel G. Catalán, Esteban Induráin, Inmaculada Lizasoain and Óscar Valero

- **Connections between the Approximate Number System and Fuzzy Logic** (ID: 269)

Rodríguez-Muñiz Luis J.

- **Spaces with fuzzy partitions and related notions** (ID: 272)

Jiří Močkoř

- **Observer Design for Discrete Time Uncertain T-S Fuzzy Systems with Estimated Premise Variables** (ID: 291)

Van-Phong Vu, Wen-June Wang, Yi Ding and Yu-Hsuan Shen

- **Isn't Every Sufficiently Complex Logic Multi-Valued Already: Lindenmabum-Tarski Algebra and Fuzzy logic Are Both Particular Cases of the Same Idea** (ID: 278)

Andrzej Pownuk and Vladik Kreinovich

### **10:40-12:00, Wednesday 28, Room 305, P-2 Applications 1**

- **On Performance vs. Risk Trade-off in Feature Selection** (ID: 289)

Peipei Chen, Anna Wilbik and Uzay Kaymak

- **A Bottom-Up Approach to Perceptual Illusions Using Self-Organized Slowing Down** (ID: 250)

Miki Hirabayashi and Hirotada Ohashi

- **Maximization of Returns under a Value-at-Risk Constraint in Fuzzy Asset Managemen** (ID: 84)

Yuji Yoshida

- **Optimal facility location problem under possibility chance constraint conditions and barriers** (ID: 152)

Hiroaki Ishii

- **On category of quantale semimodules** (ID: 128)

Mahesh Dubey and S P Tiwari

### **13:00-14:00, Wednesday 28, Piazza Hall, Plenary Talk 2**

- **Statistical Decision-Making in Mixed Models of Uncertainty**

Dan Ralescu

### **14:20-15:20, Wednesday 28, Room 203, SS-02-2 Uncertainty Handling in Recommender and Decision Support Systems**

- **A Mixture Model Approach to Utilizing Published Decision Rules** (ID:

174)

Motoyuki Oki and Masahiro Inuiguchi

- **An axiomatic approach to the estimation of interval-valued preferences in multi-criteria decision modeling** (ID: 181)  
Camilo Franco, Jens L. Hougaard and Kurt Nielsen
- **Multi-criteria decision analysis based on hesitant fuzzy linguistic term sets: Application in photovoltaic technologies assessment** (ID: 200)  
Hamza Sellak, Brahim Ouhbi and Bouchra Frikh

## **14:20-16:00, Wednesday 28, Room 204, SS-13-2 Image Processing and Computer Vision using Fuzzy Techniques**

- **Generalizing an Interval-Valued Magnification Algorithm Using Homogeneity Measures and Interval Fusion Functions** (ID: 183)  
Daniel Paternain, Aranzazu Jurio, Miguel Pagola, Edurne Barrenechea and Humberto Bustince
- **Image inpainting using colour and gradient features** (ID: 192)  
Aránzazu Jurío, Daniel Paternain and Humberto Bustince
- **Scale-Space defined from Image Fuzzy Sharpening.** (ID: 194)  
Nicolas Madrid, Petr Hurtik and Carlos Lopez Molina
- **An Iterative Algorithm for Image Inpainting Using Aggregation Functions** (ID: 198)  
Manuel González-Hidalgo, Sebastia Massanet, Arnau Mir and Daniel Ruiz-Aguilera
- **Preliminary study on an improved weight updating for fuzzy c-means with applications to image segmentation** (ID: 244)  
Vineeta Singh, Deeptha Girish and Anca Ralescu

## **14:20-16:00, Wednesday 28, Room 205, SS-04-2 Fuzzy and Intelligent Systems**

- **A Design of Uncertainty Trajectory Observer for a Class of T-S Fuzzy Models** (ID: 34)  
Hugang Han and Daisuke Hamasaki
- **Design of Self-Constructing Fuzzy Wavelet Neural Control System** (ID: 116)  
Tsu-Tian Lee, Po-Chun Wang, Chun-Fei Hsu and Chih-Ching Hsiao
- **An Obstacle Avoidance of Large-Scale Indoor Tricycle Drive Cleaning Robot Using Laser Scanner** (ID: 133)

Hsin-Yi Huang, Yun-Wen Hu, Meng-Fang Lu, Song-Shyong Chen, Jin-Tsong Jeng and Wen-Ping Chen

- **Tuning of Fuzzy Rules with a Real-coded Genetic Algorithm in Car Racing Game** (ID: 167)

Akifumi Ise, Motohide Umamo and Noriyuki Fujimoto

- **Emotional Action Generation Model Supporting Real-time Operation** (ID: 173)

Takanori Nakamura, Hiroshi Takenouchi and Masataka Tokumaru

## **14:20-15:00, Wednesday 28, Room 206, SS-32-2 Brain Engineering for Soft Behavior**

- **Fuzzy Logic Training for Sleep Apnea Classification** (ID: 203)

Douglas E. Dow and Isao Hayashi

- **Robust Directional-Diffusive Hybrid Molecular Communication with Parity-check Erasure Coding** (ID: 191)

Hiroaki Egashira, Junichi Suzuki, Jonathan Mitzman, Tadashi Nakano and Hiroaki Fukuda

## **15:00-16:00, Wednesday 28, Room 206, SS-16 Fuzzy Robotic Systems**

- **An In-Car Camera System for Traffic Sign Detection and Recognition** (ID: 125)

Shu-Chun Huang, Huei-Yung Lin and Chin-Chen Chang

- **PSO-based Fuzzy Control of a Self-Balancing Two-Wheeled Robot** (ID: 211)

Gwo-Ruey Yu, Yuan-Kai Leu and H.-T. Huang

- **Evolutionary Fuzzy Control of Two Cooperative Object-Carrying Wheeled Robots for Wall Following Through Multiobjective Continuous ACO** (ID: 212)

Chen-An Huang and Chia-Feng Juang

## **14:20-15:20, Wednesday 28, Room 207, SS-09 Medical and Healthcare Engineering**

- **A Development of Measurement System for Walking with Turning Using 6-axis Inertial Sensors and Its Reliability Evaluation** (ID: 27)

Yuki Azuma, Kouki Nagamune and Ryosuke Kuroda

- **Nursing-care Text Classification using Word Vector Representation and Convolutional Neural Networks** (ID: 126)  
Manabu Nii, Yuya Tsuchida, Yusuke Kato, Atsuko Uchinuno and Reiko Sakashita
- **Modelling a Fuzzy Rule-based Expert System combining Positive and Negative Knowledge for Medical Consultation using the importance of Symptoms** (ID: 164)  
Thi Nu Mai, Hoang Phuong Nguyen and Kaoru Hirota

### **15:20-16:00, Wednesday 28, Room 207, SS-15 Cognitive Human-Computer Interaction**

- **BCI-Based Alcohol Patient Detection** (ID: 226)  
Vinothraj Thangarajah, Denshiya Dominic Alfred, Senaka Amarakeerthi and Jayalath Ekanayake
- **A Brain Signal-Based Credibility Assessment Approach** (ID: 230)  
Samadara Dhanapala, Thilini Bakmeedeniya, Senaka Amarakeerthi, Sagara Sumathipala and Prasad Jayaweera

### **14:20-16:00, Wednesday 28, Room 302, SS-28 Fuzziness in Massive Data**

- **Which Players will Leave Their Community? Predicting Guild Abandonments in World of Warcraft Game Data** (ID: 12)  
Gergely Posfai, Gabor Magyar and Laszlo T. Koczy
- **Joining Fuzzy Transform and Local Learning for Wind Power Forecasting** (ID: 123)  
Vincenzo Loia, Stefania Tomasiello and Alfredo Vaccaro
- **Using Automatic Speech Processing to Analyze Fundamental Frequency of Child-Directed Speech Stored in a Very Large Audio Corpus** (ID: 104)  
Paul De Palma and Mark Vandam
- **Application of Regression Driven F--Transform to Smoothing of Financial Time Series** (ID: 241)  
Luigi Troiano, Pravesh Kriplani and Irene Diaz
- **An Alternative Estimation of Market Volatility based on Fuzzy Transform** (ID: 239)  
Luigi Troiano, Elena Mejuto Villa and Pravesh Kriplani

## 14:20-16:00, Wednesday 28, Room 303, G-1 Methods

- **Fuzzy Measure Identification Methods for a Multi-level Hierarchy Diagram by Assignment Functions** (ID: 59)  
Eiichiro Takahagi
- **Principal Component Analysis Approach in Selecting Type-1 and Type-2 Fuzzy Membership Functions for High-dimensional Data** (ID: 163)  
Desh Raj, Aditya Gupta, Kenil Tanna, Bhuvnesh Garg and Frank Rhee
- **Behavioral Analysis of Fuzzy Cognitive Map Models by Simulation** (ID: 62)  
Miklós F. Hatwágner, Vesa A. Niskanen and László T. Kóczy
- **Multi-Scale Compressive Tracking** (ID: 129)  
Chi-Yi Tsai, Yen-Chang Feng and Zih-Syuan Jhang
- **Visualization of Two-dimensional Interval Type-2 Fuzzy Membership Functions using General Type-2 Fuzzy Membership Functions** (ID: 180)  
Rishav Chourasia, Vaibhav Saxena, Nikhil Yadala and Frank Chung-Hoon Rhee

## 14:20-16:00, Wednesday 28, Room 304, G-2 Aggregation and summarization

- **A Fuzzy Multicriteria Aggregation method for Data Analytics: application to Insider Threat Monitoring** (ID: 87)  
Iván Palomares, Harsha Kalutarage, Yan Huang, Paul Miller, Robert McCausland and Gavin McWilliams
- **Some results on aggregation for fuzzy classification** (ID: 207)  
José Carlos R. Alcantud, Susana Díaz and Susana Montes
- **A similarity classifier with generalized ordered weighted averaging operator** (ID: 35)  
Onesfole Kurama, Pasi Luukka and Mikael Collan
- **Similarity of histograms and circular histograms from interval and fuzzy data** (ID: 150)  
Jozsef Mezei, Pasi Luukka and Mikael Collan
- **A Novel Approach to Noise Clustering in Multivariate Fuzzy c-Means** (ID: 231)  
Katsuhiko Honda, Seiki Ubukata and Akira Notsu

## 14:20-16:00, Wednesday 28, Room 305, P-3 Theory 2



- **Knowledge Graphs and Fuzziness: Categorical Approach** (ID: 290)  
Marek Reformat
- **From Fuzzy Universal Approximation to Fuzzy Universal Representation: It All Depends on the Continuum Hypothesis** (ID: 261)  
Mahdokht Afravi and Vladik Kreinovich
- **Fuzzy Sets As Strongly Consistent Random Sets** (ID: 260)  
Kittawit Autchariyapanitkul, Hung Nguyen and Vladik Kreinovich
- **On Fuzzy 'alpha' Hyper-connectedness In Fuzzy Topological Spaces** (ID: 279)  
Dipankar De

### **9:00-10:00, Thursday 29, Piazza Hall, Plenary Talk 3**

- **Knowing Sensitivity and Intelligence from the Viewpoint of System and Design**  
Hisao Shiizuka

### **10:20-12:00, Thursday 29, Room 203, SS-11-1 Soft Computing Techniques for Machine Learning**

- **Associated Multi-label Fuzzy-rough Feature Selection** (ID: 48)  
Yanpeng Qu, Rong Yu, Anshdeng Deng and Longzhi Yang
- **A calibration with an adaptive data selection based on Bayes estimation for a successive stochastic approximation ADC system** (ID: 135)  
Keiji Tatsumi, Toshimasa Matsuoka and Sadahiro Tani
- **An Integrated Method for Mining Association and Sequential Rules in the Distributed Databases** (ID: 144)  
Jih-Jeng Huang
- **Michigan-style Fuzzy GBML with (1+1)-ES Generation Update and Multi-Pattern Rule Generation** (ID: 243)  
Yusuke Nojima, Shuji Takemura, Kazuhiro Watanabe and Hisao Ishibuchi
- **Supervised Semi-Autoencoder Learning for Multi-Layered Neural Networks** (ID: 30)  
Ryotaro Kamimura and Haruhiko Takeuchi

### **10:20-12:00, Thursday 29, Room 204, SS-05-1 Robotic and Embedded Systems**

- **Adaptive PD Networks Tracking Control with Full-State Constraints for**

**Redundant Parallel Manipulators (ID: 20)**

Van-Truong Nguyen, Chyi-Yeu Lin, Shun-Feng Su, Ngoc-Quan Nguyen and Quoc-Viet Tran

- **Real Time Human Tracking Using Improved CAM-Shift (ID: 21)**  
Ngoc-Quan Nguyen, Shun-Feng Su, Van-Truong Nguyen, Quoc-Viet Tran and Jin-Tsong Jeng
- **Real-Time Non-contact Breath Detection from Video using Adaboost and Lucas-Kanade algorithm (ID: 25)**  
Quoc-Viet Tran, Shun-Feng Su, Chen-Chia Chuang, Van-Truong Nguyen and Ngoc-Quan Nguyen
- **Learning Based Semantic Segmentation for Robot Navigation in Outdoor Environment (ID: 69)**  
Janice Lin, Hsiang-Chieh Chen, Sheng-Kai Huang and Wen-June Wang
- **Reproducible Large-Scale Social Simulations on Various Computing Environment (ID: 220)**  
Takuya Harada and Tadahiko Murata

**10:20-12:00, Thursday 29, Room 205, SS-27-1 F-transforms: Bridging Theory and Applications**

- **Time Series Clustering using Numerical and Fuzzy Representations (ID: 80)**  
Tatyana Afanaseva, Nadezhda G. Yarushkina and Ivan Sibirev
- **Developing a system for time series data mining on the basis of F-transform and the domain-specific ontology (ID: 86)**  
Nadezhda Yarushkina, Aleksey Filippov, Vadim Moshkin, Anton Romanov and Eugeny Egov
- **$\$M\$$ -estimators using optimization algorithm based on  $\$F\$$ -transform (ID: 97)**  
Jin Hee Yoon, Deokhwan Kyeong and Kisung Seo
- **Tectogrammatical Trees and Fuzzy Natural Logic in Linguistic Characterization of Processes (ID: 107)**  
Vilem Novak
- **On residuated lattice based fuzzy variable precision  $\$F\$$ -transform (ID: 120)**  
Anand Pratap Singh and S. P. Tiwari

**10:20-12:00, Thursday 29, Room 206, SS-20-1 Recent Trends of Clustering Methodologies**

- **Hierarchical clustering algorithms with automatic estimation of the number of clusters** (ID: 13)  
Ryosuke Abe, Sadaaki Miyamoto, Yasunori Endo and Yukihiro Hamasuna
- **Visual Assessment of Co-cluster Structure through Cooccurrence-Sensitive Ordering** (ID: 50)  
Katsuhiko Honda, Takuya Sako, Seiki Ubukata and Akira Notsu
- **Controlled-sized Clustering Based on Optimization** (ID: 55)  
Yasunori Endo, Sachiko Ishida and Naohiko Kinoshita
- **Possibilistic Co-clustering Based on Extension of Noise Rejection Scheme in FCCMM** (ID: 93)  
Seiki Ubukata, Katsuya Koike, Akira Notsu and Katsuhiko Honda
- **A Study on Cluster Validity Measures for Clustering Network Data** (ID: 89)  
Yukihiro Hamasuna, Takuya Fujisawa, Ryo Ozaki and Yasunori Endo

## **10:20-12:00, Thursday 29, Room 207, SS-10-1 Aggregation Functions: Theory and Practice**

- **New Results on Pre-aggregation functions: introducing (light) pre-t-norms** (ID: 43)  
Graçaliz Dimuro, Humberto Bustince, Javier Fernandez, Radko Mesiar and Benjamin Bedregal
- **Pseudo Strong Equality Index for Interval-Valued Fuzzy Sets with respect to Admissible Orders** (ID: 71)  
Laura De Miguel Turullols, Mikel Sesma-Sara, Javier Fernandez, Carlos Lopez-Molina and Humberto Bustince
- **Averaging Aggregation Functions Based on Inclusion-exclusion Integrals** (ID: 74)  
Aoi Honda and Simon James
- **The role of betweenness relations, monometrics and penalty functions in data aggregation** (ID: 108)  
Raúl Pérez-Fernández and Bernard De Baets
- **Aggregation tools for the evaluation of classifications** (ID: 130)  
Fabian Castiblanco, Daniel Gomez, Javier Montero and J. Tinguaro Rodriguez

## **10:20-12:00, Thursday 29, Room 302, SS-01-1 Fuzzy Optimization and Decision Making: Theory, Algorithms, and Applications**

- **Hybrid Swarm Model with Changing Agent of Particle Swarm and Firefly** (ID: 218)  
Heng Xiao and Toshiharu Hatanaka
- **Individual Relative Assessment Based on Interval AHP with Interval Comparisons Based on DEA** (ID: 39)  
Tomoe Entani
- **On the Design of Similarity Measures Based on Fuzzy Integral** (ID: 95)  
Jaehoon Cha, Sanghyuk Lee, Kyeong Soo Kim and Witold Pedrycz
- **Interval Type 2 Fuzzy Sets Multiple Criteria Decision Making Based on Quantifier Guided Aggregation Ordered Weighted Averaging Operator** (ID: 47)  
Kuo-Ping Chiao
- **On Fuzzy Gamma<sup>star</sup>-Locally Closed Sets and Their Applications** (ID: 42)  
Baby Bhattacharya, Jayasree Chakraborty, Arnab Paul and G. Sree Anusha

### **10:20-12:00, Thursday 29, Room 303, G-3 Infrastructure and society**

- **Reflective Multi-agent Model Using Semantic Similarity Measure and Negotiation Protocol for Solving Heterogeneity** (ID: 1)  
Dhouha Ben Noureddine, Atef Gharbi and Samir Ben Ahmed
- **Fuzzy Techniques Explain Empirical Power Law Governing Wars and Terrorism** (ID: 4)  
Hung Nguyen, Kittawit Autchariyapanitkul and Vladik Kreinovich
- **Which Material Design Is Possible Under Additive Manufacturing: A Fuzzy Approach** (ID: 109)  
Francisco Zapata, Olga Kosheleva and Vladik Kreinovich
- **Fault Classification on the hybrid transmission line system between overhead line and underground cable** (ID: 161)  
Jittiphong Klomjit and Atthapol Ngaopitakkul
- **Behavior Analysis of Winding to Ground Fault in Transformer using High and Low Frequency Component from Discrete Wavelet Transform** (ID: 37)  
Jintasit Rumkidkarn and Atthapol Ngaopitakkul

### **10:20-12:00, Thursday 29, Room 304, P-4 Decision and analysis**

- **Rough set in imperfect decision systems** (ID: 252)

Thinh Cao, Koichi Yamada, Muneyuki Unehara, Izumi Suzuki and Do Van Nguyen

- **Interval valued fuzzy soft sets in decision making based on game theory and their applications** (ID: 276)  
Anjan Mukherjee
- **Design of Event Analysis System using K-means Clustering** (ID: 265)  
Jung-Sook Kim
- **Classification of Urban Health Patterns using Fuzzy Cluster Analysis** (ID: 98)  
Takamasa Akiyama and Hiroaki Inokuchi

### **10:20-12:00, Thursday 29, Room 305, P-5 Applications 2**

- **SIFT Limitations in Sub-image Searching** (ID: 264)  
Petr Hurtik, Petra Stevuliakova and Irina Perfilieva
- **Influences on TMS-induced fNIRS signal by the watching of exercise-movement** (ID: 154)  
Sayaka Morishita, Hidekatsu Ito and Suguru N Kudoh
- **Design of Communication Relay System for Safe Navigation of Unmanned Surface Vehicle** (ID: 282)  
Ho Namgung and Jung Sik Jeong
- **Contrasting High Arousal Emotions: A BCI-Based Approach** (ID: 225)  
Kasun Kuruppu, Senaka Amarakeerthi, Chinthaka Premachandra and Liyanage De Silva

### **13:00-13:40, Thursday 29, Room 203, SS-11-2 Soft Computing Techniques for Machine Learning**

- **IWOVO: A new Interval-Valued One-Vs-One approach for multi-class classification problems** (ID: 124)  
Mikel Elcano, Mikel Galar, José Antonio Sanz Delgado, Giancarlo Lucca and Humberto Bustince
- **Time-series data visualization by autoregressive GPDM** (ID: 64)  
Nobuhiko Yamaguchi

### **13:40-14:40, Thursday 29, Room 203, SS-22**

- **Management Decision by Combination Two-level DEA and Kernel-based Mechanism** (ID: 44)  
Fu-Hsiang Chen, Jhih-Hong Zeng, Ming-Fu Hsu and Sin-Jin Lin

- **Time Series Data Analysis by Rough Set and Merging Method of Decision Rule** (ID: 90)  
Yoshiyuki Matsumoto and Junzo Watada
- **The Difference between the Formulations of Fuzzy Robust Regression Model** (ID: 102)  
Yoshiyuki Yabuuchi

### **13:00-14:40, Thursday 29, Room 204, SS-05-2 Robotic and Embedded Systems**

- **Motion Planning and Control of a Picture-Based Drawing Robot System** (ID: 117)  
Chun-Fei Hsu, Wei-Heng Kao, Wei-Yu Chen and Kai-Yi Wong
- **Intelligent Control for a Dynamically Stable Two-Wheel Mobile Manipulator** (ID: 118)  
Wei-Fu Kao, Chun-Fei Hsu and Tsu-Tian Lee
- **A Simplified Interval Type-2 Fuzzy CMAC** (ID: 121)  
Chia-Wen Chang, Wen-Rong Xiao, Chih-Ching Hsiao, Song-Shyong Chen and Chin-Wang Tao
- **Constrained Fuzzy Stabilization for Mobile Robots with Laser-Range-Finder Localization** (ID: 132)  
Chung-Hsun Sun, Hsuan Chen and Hsiang-Chieh Chen
- **Adaptive Navigation and Motion Planning for a Track Robot** (ID: 222)  
Sudantha Bh, Sagara Sumathipala, Kolitha Warnakulasooriya, Elvitigala Sandaru and Pansilu Jayasuriya

### **13:00-13:40, Thursday 29, Room 205, SS-27-2 F-transforms: Bridging Theory and Applications**

- **Drone real-time control based on pattern matching** (ID: 146)  
Marek Vajgl, Petr Hurtik and Petra Števíliáková
- **Shooting Method Based on Higher Degree F-transform** (ID: 215)  
Irina Perfilieva, Petra Stevíliakova and Radek Valasek

### **13:40-14:40, Thursday 29, Room 205, SS-26**

- **Chaotic behavior in love affairs of fractional order with fuzzy membership function as an external force** (ID: 52)  
Linyun Huamg and Youngchul Bae
- **Improved Stability Condition for Fuzzy Systems with Interval Time**

**Varying Delay** (ID: 114)

Rupak Datta, Rajeeb Dey, Baby Bhattacharya and Abanishwar Chakraborti

- **Application of Multi-agent Control Systems in Energy-Efficient Intelligent Building** (ID: 214)

Young Im Cho, Aigerim Altayeva, Batyrkhan Omarov and Zharas Suleimenov

## **13:00-13:40, Thursday 29, Room 206, SS-20-2 Recent Trends of Clustering Methodologies**

- **Learning Prototype-based Classifiers by Margin Maximization** (ID: 81)  
Chiharu Wakou, Yoshifumi Kusunoki and Keiji Tatsumi
- **Trajectory clustering using a new distance based on minimum convex hull** (ID: 147)  
Xu Gao and Fusheng Yu

## **13:40-14:40, Thursday 29, Room 206, SS-25**

- **Automatic Brightness Calibration System by Fuzzy Inference System for Object Recognition** (ID: 54)  
Eun Kyeong Kim, Hyunhak Cho, Hansoo Lee and Sungshin Kim
- **Integration of Improved GRBFN with Fuzzy Clustering for Electricity Price Forecasting** (ID: 171)  
Hiroyuki Mori and Satoshi Itaba
- **Self-Organization Primate Algorithm for Optimization Problems** (ID: 112)  
Amarita Ritthipakdee and Arit Thammano

## **13:00-13:40, Thursday 29, Room 207, SS-10-2 Aggregation Functions: Theory and Practice**

- **On Generalized Mulholland Inequality and Dominance on Nilpotent Triangular Norms** (ID: 137)  
Milan Petrík
- **Multi-objective optimization for OWA filters on SAR imagery** (ID: 177)  
Roberto Galski, Leonardo Torres, José Carlos Becceneri, Sandra Sandri, Corina Freitas and Sidnei Santanna

## **13:40-14:40, Thursday 29, Room 207, SS-08 Fuzzy Implication Functions**

- **On Fuzzy Implication Functions Defined Using Powers of Continuous t-norms** (ID: 70)  
Sebastia Massanet, Jordi Recasens and Joan Torrens
- **On some constructions of ordinal sums of fuzzy implications** (ID: 179)  
Paweł Drygaś and Anna Król
- **Some New Solutions of the Distributivity Law  $I(x,S(y,z))=S(I(x,y),I(x,z))$  among R-implications and Triangular Conorms** (ID: 227)  
Wanda Niemyska and Michal Baczynski

### **13:00-14:40, Thursday 29, Room 302, SS-01-2 Fuzzy Optimization and Decision Making: Theory, Algorithms, and Applications**

- **Bilevel Linear Programming with Lower-Level Fuzzy Objective Function** (ID: 101)  
Puchit Sariddichainunta and Masahiro Inuiguchi
- **Fuzzy Systems Modeling with Participatory Search Algorithm** (ID: 141)  
Yi Liu and Fernando Gomide
- **Non-parametric Interval Weight Estimation Methods from a Crisp Pairwise Comparison Matrix** (ID: 159)  
Masahiro Inuiguchi and Shigeaki Innan
- **Swarm Fuzzy-Reinforcement Coordination using Bloom's Taxonomy of the Cognitive Domain** (ID: 204)  
Nasibeh Rady Raz and Mohammad-R. Akbarzadeh-T.

### **13:00-14:40, Thursday 29, Room 303, G-4 Education and networking**

- **Multi-Agent Approach for Resilience Enhancement in Wireless Sensor and Actuator Networks** (ID: 36)  
Fábio Januário, Alberto Cardoso and Paulo Gil
- **Improving Fuzzy FMEA Model for Student Projects** (ID: 88)  
Issarapong Khuankrue, Fumihiko Kumeno, Yutaro Ohashi and Yasuhiro Tsujimura
- **Vocabulary Elicitation for Informative Descriptions of Classes** (ID: 134)  
Gregory Smits, Olivier Pivert and Marie-Jeanne Lesot
- **ANFIS Application to Infer Student Performance in English Learning Using Affective Factors** (ID: 186)  
Fitra Bachtiar, Gunadi Sulistyio, Eric Cooper and Katsuari Kamei



- **If I don't know, should I infer? Reasoning around ignorance in a many-valued framework** (ID: 238)

Adrien Revault d'Allonnes and Marie-Jeanne Lesot

### **13:00-14:40, Thursday 29, Room 304, P-6 Learning**

- **The Multifaceted Evaluation of Regional Health with Neural Network Model** (ID: 99)  
Hiroaki Inokuchi and Takamasa Akiyama
- **Breast Cancer Classification using Radial Basis Function Neural Network (RBFNN) Model: A Comparative study of K-Means and Fuzzy c-Means Clustering Methods** (ID: 115)  
Dhoriva Urwatul Wutsqa and Aziza Ratna Kumala
- **Development of Support Vector Regression models for monitoring of stem cells cultivation process** (ID: 251)  
Vytautas Galvanauskas, Tomas Tekorius and Rimvydas Simutis
- **Disease Stage Classification for Glioblastoma Multiforme Histopathological Images using Deep Convolutional Neural Network** (ID: 270)  
Asami Yonekura, Hiroharu Kawanaka, Surya Prasath, Bruce Aronow and Haruhiko Takase
- **Applying the Concept of Fuzzy for Inverse Reinforcement Learning** (ID: 254)  
Kao-Shing Hwang, Wei-Cheng Jiang, Yi-Yun Cho and Chi-Yuan Tai
- **Forward Variance Potentiality to Connect Hidden Layers in Multi-Layered Neural Networks** (ID: 280)  
Ryotaro Kamimura and Ruka Nakajima

### **13:00-14:40, Thursday 29, Room 305, P-7 Applications 3**

- **Multi-Agent Simulation of Promoting Clean Energy Vehicle for Evaluation of Policies** (ID: 158)  
Masashi Okushima
- **A Fuzzy Pose Estimator by Integrating Vision and Distance Sensor based SLAM** (ID: 263)  
Yi-Bin Lin, Chih-Yin Liu, Chung-Lin Lee, Cheng-Hui Li and Tzue-Hseng S. Li
- **Parallel Computing for Reconstructing Large-Scale Household Composition from Statistics for Agent-Based Social Simulations** (ID: 210)  
Takuya Harada and Tadahiko Murata

- **Optimal Genetic Fuzzy Control for Multiple Wheeled Robots** (ID: 255)  
Sendren Sheng-Dong Xu, Yu-Chieh Kung, Hsu-Chih Huang and Wei-En Hsu

## 15:00-16:20, Thursday 29, Meeting Hall, Poster

- **Detection of Inadequate Descriptions in Wikipedia using Information Extraction based on Word Clustering** (ID: 61)  
Hokuto Akano, Masaki Murata and Qing Ma
- **UniProt protein sequence data classification using genetically-optimized fuzzy rule-based systems** (ID: 131)  
Marian B. Gorzalczany and Filip Rudzinski
- **6-DoF Planar Pose Estimation Based on a Real-Time Template Tracking Algorithm** (ID: 160)  
Chi-Yi Tsai, Kuang-Jui Hsu and Ting-Yuan Liu
- **Fast and Reliable Iris Detection by Boundary Tracing** (ID: 65)  
Katsuki Tozawa, Riki Ishikawa and Tomohiko Ohtsuka
- **Effects of Varying Accuracy Rate of a Robot in Collaborative Learning with Humans** (ID: 105)  
Felix Jimenez, Tomohiro Yoshikawa, Takeshi Furuhashi and Masayoshi Kanoh
- **Optimization of Location Problem for Power Flow Controller** (ID: 110)  
Takayuki Shiina, Susumu Morito, Jun Imaizumi and Chunhui Xu
- **A Study on EEG-based Emotion Recognition using Averaging Process** (ID: 142)  
Yuuki Noro, Tomohiro Yoshikawa and Takeshi Furuhashi
- **Parameter Estimation Model from Questionnaire for Multi-agent Simulation Model of Urban Traffic** (ID: 166)  
Takuya Matsumoto, Atsushi Sakai, Yuya Morinaga, Kazutoshi Sakakibara, Makoto Ohara and Hisashi Tamaki
- **Effects of Meaningful or Meaningless Noise on Selective Attention to Auditory Cognitive Task** (ID: 206)  
Takahiro Tamesue
- **Reason Maintenance Belief Logic based on Information Fusion** (ID: 246)  
Tuan-Fang Fan and Churn-Jung Liao
- **Use of Web Search Engines in TF-IDF based Word Network Construction for Extracting Useful Information** (ID: 247)  
Takashi Kamihigashi, Masaki Murata and Qing Ma
- **Is Confirmation Bias Related to the Number of Recalled Happy Events? If so, How?** (ID: 249)  
Kazunori Fujimoto, Masaaki Fuse, Shunichiro Sasaki, Shoko Yamane and

Grzegorz Mardyla

- **Building a fuzzy model for currency option pricing** (ID: 259)  
Zhang Huiming and Junzo Watada
- **Color Aesthetics: Fuzzy based User-driven Method for Harmony and Preference Prediction** (ID: 268)  
Pakizar Shamoï, Atsushi Inoue and Hiroharu Kawanaka
- **Design of Fuzzy Logic System for Hovering Control of Quad-Copter** (ID: 275)  
Hyun-Ho Yoo, Hansang Kim and Byung-Jae Choi
- **An approach to derivation method of the "Group Egogram"** (ID: 283)  
Makoto Ohki
- **Prototype Development of Graphics Editor Available for Blind People and the Experiment of a Blind Person** (ID: 284)  
Yuji Masaki, Noboru Takagi and Tatsuo Motoyoshi
- **Interactive Evolutionary Computation Method using Disliked Individual Selection** (ID: 285)  
Yusuke Soga, Hiroshi Takenouchi and Masataka Tokumaru
- **Utilization of Rough Sets for Intrusion Detection** (ID: 286)  
Ahmed Nasser, Hayri Sever and Vijay Raghavan
- **Artificial Intelligence Literacy: Simulation, ELIZA and Skit** (ID: 292)  
Bobby Johnson, Stephen Shervais, Debra Morgan and Atsushi Inoue
- **Evolutionary Training of Autoencoders by Genetic Algorithm** (ID: 248)  
Hidehiko Okada
- **User Simulation to Inspect Menu Hierarchy Design Using Information Scent Model** (ID: 266)  
Yukio Horiguchi, Naoki Kojima, Tetsuo Sawaragi and Hiroaki Nakanishi

## **9:20-11:00, Friday 30, Room 203, SS-31 Stochastic Optimization for Complex Adaptive Systems**

- **Deep Convolutional Networks for Human Sketches by means of the Evolutionary Deep Learning** (ID: 219)  
Saya Fujino, Naoki Mori and Keinosuke Matsumoto
- **A proposal of a low-dimensional approach based on DIRECT method and t-SNE for single optimization problems with many variables** (ID: 223)  
Takuya Kaihatsu and Shinya Watanabe
- **Incremental Learning for SIRMs Fuzzy Systems by Adam method** (ID: 228)

Shu Matsumura and Tomoharu Nakashima

- **Estimating the Effect of an External Factor behind an Input-Output Table** (ID: 229)

Kien Tran, Masao Kubo and Hiroshi Sato

- **Performance Comparison of EMO Algorithms on Test Problems with Different Search Space Shape** (ID: 237)

Yuki Tanigaki, Yusuke Nojima and Hisao Ishibuchi

## **9:20-11:00, Friday 30, Room 204, SS-03 Human Symbiotic Systems**

- **Operating Instruction Method Based on EMG for Omnidirectional Wheelchair Robot** (ID: 53)

Yoichiro Maeda and Shoji Ishibashi

- **Estimation of User Location for Hearing-Dog Robot** (ID: 60)

Hoshito Kudo, Satoshi Tanaka, Yukihiro Yoshida, Tsuyoshi Nakamura, Masayoshi Kanoh, Koji Yamada, Daimu Oiwa, Yuji Iwahori and Shinji Fukui

- **A Study on Document Classification using Multiple Distributed Representations** (ID: 106)

Koji Takuwa, Tomohiro Yoshikawa, Felix Jimenez and Takeshi Furuhashi

- **Fuzzy emotional presentation system to enjoy watching baseball games** (ID: 188)

Hirofumi Sato and Junji Nishino

- **Multi-dimensional Fuzzy Set identification using Persistent Homology** (ID: 190)

Takashi Harada and Junji Nishino

## **9:20-11:00, Friday 30, Room 205, SS-19 Human Centered Transportation Systems**

- **Toward Evaluation of Mixed Culture's Team Works - Case Study of Ship Bridge Simulator-based Training for Cadets -** (ID: 6)

Koji Murai, Jie Wang, Yibing Wang and Yang Qilei

- **Evaluation of Mental Workload for a Newly-Appointed Pilot Using Salivary NO<sub>3</sub>- Concentration and LF/HF Values, Compared with Port-Coordinators** (ID: 19)

Kenichi Kitamura, Koji Murai and Shin-Ichi Wakida

- **Development of Maneuvering Support System for Ship Docking** (ID: 143)

Tadatsugi Okazaki, Riku Kitagawa, Kazushi Matsubara and Hideyuki Kashima

- **Effectiveness of the OZT taking into account with the Other Ships' Waypoints Information** (ID: 197)

Jun Kayano and Kei Kumagai

## 9:20-11:00, Friday 30, Room 206, G-5 Business

- **Scheduling Divisible Loads on Heterogeneous Linear Networks Using Pipelined Communications** (ID: 26)  
Chi-Yeh Chen
- **An Island-based Algorithm for Group Stock Portfolio Optimization** (ID: 77)  
Chun-Hao Chen, Wan-Yi Shen, Tzung-Pei Hong and Ja-Hwung Su
- **An Extension of MOORA Approach for Group Decision Making based on Interval valued Intuitionistic Fuzzy Numbers in Digital Supply Chain** (ID: 83)  
Gulcin Buyukozkan and Fethullah Gocer
- **A Novel Fuzzy Result Ranking Technique** (ID: 182)  
Christophe Billiet, Robin De Mol and Guy De Tre
- **Dynamic Timetable Scheduling with Reverse-flow Technique in Fuzzy Environment** (ID: 233)  
Yanan Zhang, Zhaopeng Meng and Anca Ralescu

## 9:20-11:00, Friday 30, Room 207, P-8 Robots

- **Mobile Robot Navigation System Using Distributed Computing System Based on ROS Architecture** (ID: 288)  
Kai-Yeh Wei, Chen-Chien Hsu, Wei-Yen Wang and I-Hsum Lee
- **Effective Maneuver and Control for Passive Robot Walking Helper Based on Foot Image** (ID: 262)  
Zih-Lun Huang, Chun-Hsu Ko and Kuu-Young Young
- **A Novel Tracked Robot with Stairs Climbing Abilities Using Distributed Computing System Based on ROS** (ID: 277)  
Kai-Chun Yen, I-Hsum Lee, Yi-Hsing Chien, Wei-Yen Wang and Chen-Chien Hsu
- **Adaptive Terminal Sliding-Mode Formation Control for Uncertain Networked Heterogeneous Swedish Wheeled Omnidirectional Robots Using Output Recurrent Fuzzy Wavelet Neural Networks** (ID: 281)  
Ching-Chih Tsai, Xing-Fu Wang and Feng-Chun Tai

## 9:20-11:00, Friday 30, Room 302, G-6 Theory

- **Scaling-Invariant Description of Dependence Between Fuzzy Variables: Towards a Fuzzy Version of Copulas** (ID: 3)  
Gerardo Muela, Vladik Kreinovich and Christian Servin
- **Towards Intuitionistic  $\mathcal{L}$ -fuzzy Formal t-Concepts** (ID: 168)  
Ondrej Kridlo and Manuel Ojeda-Aciego
- **Relational fuzzy Galois connections** (ID: 199)  
Inma P. Cabrera, Pablo Cordero and Manuel Ojeda-Aciego
- **Solutions of fuzzy correspondence inequations with sup-conjunctive composition** (ID: 235)  
Kai Zuo, Xue-Ping Wang and Xiaohong Zhang

## 9:20-11:00, Friday 30, Room 303, P-9 Applications 4

- **Bayesian Network as a Modelling Tool for Increasing Knowledge on the Factors Influencing Vineyard Longevity and Sustainability** (ID: 253)  
Jelena Cosic, Steffen Klaere, Matthew Goddard and Bruno Fedrizzi
- **Fuzzy ideals generated by fuzzy subsets of a quantale** (ID: 256)  
Xiaokun Huang and Qingguo Li
- **Modeling of Behavior in Bus for Counting Multiple Passengers without Identification** (ID: 267)  
Tetsushi Minami and Kanta Tachibana
- **Data-driven habitat modelling using high resolution ecohydraulic data in an agricultural canal** (ID: 271)  
Shinji Fukuda and Mitsuru Ohira
- **A Case Study of Relationships Between Road Network Structures and OD Distributions** (ID: 287)  
Takeshi Uchitane

## 11:20-12:20, Friday 30, Meeting Hall, Legend Lecture

- **Current Perspectives on Choquet Calculus**  
Michio Sugeno

## 12:20-12:40, Friday 30, Meeting Hall, Award Ceremony

- **Award Ceremony and Closing**