IUKM 2015

The 4th International Symposium on

# Integrated Uncertainty in Knowledge Modelling and Decision Making

**Nha Trang, Vietnam, October 15-17, 2015**

## THURSDAY, 15TH OCTOBER (morning)

7:30 – 8:30 Registration

8:30 – 9:00 Opening

Crystal Room [General Chairs, PC Chairs, Local Organization Chairs]

9:00 – 10:00 Plenary

Crystal Room **Epistemic Uncertainty Modeling: The-State-of-the-Art**
Hung T. Nguyen, New Mexico State University, USA, and Chiang Mai University, Thailand
Chair: Vladik Kreinovich

10:00 – 10:30 Coffee break

10:30 – 12:10 Parallel Session A: Fuzziness and Knowledge Modelling [30 minutes for invited and 22 minutes for others]

Crystal Room Chair: Radim Jirousek

What is fuzzy natural logic? **[Invited talk]**
*Vilem Novak*, University of Ostrava, Czech Republic

Combining fuzziness and context sensitivity in game based models of vague quantification
*Christian Fermüller*

New model of a fuzzy associative memory
*Irina Perfilieva*

Construction of associative functions for several fuzzy logics via the ordinal sum theorem
*Mayuka F. Kawaguchi and Michiro Kondo*

10:30 – 12:00 Parallel Session B: Data Mining and Uncertainty Management [22 minutes for each presentation]

Lotus Room Chair: Atsuo Yoshitaka

An ensemble learning approach based on rough set preserving the qualities of approximations
*Seiki Ubukata, Taro Miyazaki, Akira Notsu, Katsuhiro Honda and Masahiro Inuiguchi*

Evidence combination focusing on significant focal elements for recommender systems
*Van Doan Nguyen, Van Nam Huynh*

Applying covering-based rough set theory to user-based collaborative filtering to enhance the quality of recommendations
*Zhipeng Zhang, Yasuo Kudo and Tetsuya Murai*

Application of Uncertainty Modeling Frameworks to Uncertain Isosurface Extraction
*Mahsa Mirzargar, Yanyan He and Mike Kirby*

12:10 – 13:40 Lunch

## THURSDAY, 15TH OCTOBER (afternoon)

13:40 – 14:40 Plenary

Crystal Room **Ordinal Preference Models - Learning from the Savage's Omelet Problem**
Michio SUGENO, European Centre for Soft Computing, SPAIN
Chair: Hung T. Nguyen

14:40 – 15:10 Coffee break

15:10 – 17:00 Parallel Session A: Optimization and Decision Making [22 minutes for each presentation]

Crystal Room Chair: Yasuo Kudo

Logarithmic conversion approach to the estimation of interval priority weights from a pairwise comparison matrix

*Masahiro Inuiguchi and Shigeaki Innan*

On customer satisfaction of battery electric vehicles based on Kano model: a case study in Shanghai

*Yanping Yang, Hong-Bin Yan and Tieju Ma*

Cognitively stable generalized Nash equilibrium in static games with unawareness

*Yasuo Sasaki*

The importance of fuzzy preference in course assignment problem

*Artur Gorka and Phantipa Thipwiwatpotjana*

Maximum lower bound estimation of fuzzy priority weights from a crisp comparison matrix

*Tomoe Entani and Masahiro Inuiguchi*

15:10 – 17:00 Parallel Session B: Applied Econometrics [22 minutes for each presentation]

Lotus Room Chair: Akira Notsu

Capital asset pricing model with interval data

*Sutthiporn Piamsuwannakit, K. Autchariyapanitkul, S. Sriboonchitta and Rujira Ouncharoen*

Co-movement and dependency between New York stock exchange, London stock exchange, Tokyo stock exchange, oil price, and gold price

*Pathairat Pastpipatkul, Woraphon Yamaka and Songsak Sriboonchitta*

Spillovers of quantitative easing on financial markets of Thailand, Indonesia, and the Philippines

*Pathairat Pastpipatkul, Woraphon Yamaka, Aree Wiboonpongse and Songsak Sriboonchitta*

Volatility and dependence for systemic risk measurement of the international financial system

*Jianxu Liu, Songsak Sriboonchitta, Panisara Phochanachan and Jiechen Tang*

Impact of quantitative easing policy of United States of America on Thai economy system by MS-SFABVAR

*Pathairat Pastpipatkul, Warawut Ruankham, Aree Wiboonpongse and Songsak Sriboonchitta*

17:00 – 18:00 Break and Move to Ngoc Trai Restaurant

18:00 – 20:00 **Welcome Reception**

## FRIDAY, 16TH OCTOBER (morning)

7:30 – 8:30 Registration

9:00 – 10:00 Plenary

Crystal Room **Fuzzy sets, multisets, and rough approximations**
Sadaaki Miyamoto, University of Tsukuba, JAPAN
Chair: Van-Nam Huynh

10:00 – 10:30 Coffee break

10:30 – 12:00 Parallel Session A: Uncertainty Inference and Optimization [22 minutes for each presentation]

Crystal Room Chair: Zengchang Qin

Minimum description length principle for compositional model learning
*Radim Jirousek and Iva Krejcova*

On the property of SIC fuzzy inference model with compatibility functions
*Hirosato Seki*

Proposal of grid area search with UCB for discrete optimization problem
*Akira Notsu, Koki Saito, Yuhumi Nohara, Seiki Ubukata and Katsuhiro Honda*

An effective method for optimality test over possible reaction set for maximin solution of bilevel linear programming with ambiguous lower-level objective function
*Puchit Sariddichainunta and Masahiro Inuiguchi*

10:30 – 12:00 Parallel Session B: Applied Econometrics [22 minutes for each presentation]

Lotus Room Chair: Hong-Bin Yan

Why ARMAX-GARCH linear models successfully describe complex nonlinear phenomena: a possible explanation
*Hung Nguyen, Vladik Kreinovich, Olga Kosheleva and Songsak Sriboonchitta*

Volatility linkages between price returns of crude oil and crude palm oil in the ASEAN region: A copula based GARCH approach
*Teera Kiatmanaroch, O. Puarattanaarunkorn, K. Autchariyapanitkul and S. Sriboonchitta*

The economic evaluation of volatility timing on commodity futures using periodic GARCH-copula model
*Xue Gong, Songsak Sriboonchitta and Jianxu Liu*

Business cycle of international tourism demand in Thailand: A Markov-switching Bayesian vector error correction model
*Woraphon Yamaka, Pathairat Pastpipatkul and Songsak Sriboonchitta*

12:00 – 13:30 Lunch

13:30 – 15:10 Parallel Session A: Natural Language Engineering [30 minutes for invited and 22 minutes for others]

Crystal Room Chair: Hien T. Nguyen

Research on Thai natural language processing and application to news summarization and public hearing **[Invited talk]**
*Thanaruk Theeramunkong*, Thammasat University, Thailand

Improving word alignment through morphological analysis
*Vuong Van Bui, Thanh T. Tran, Nhat Bich T. Nguyen, Tai Dinh Pham, Anh Ngoc Le, and Cuong Anh Le*

A multifaceted approach to sentence similarity
*Hien Nguyen, Phuc Duong and Tuan Le*

Learning word alignment models for Kazakh-English machine translation
*Amandyk Kartbayev*

## FRIDAY, 16TH OCTOBER (afternoon)

13:30 – 15:20 Parallel Session B: Dependence Modelling and Applied Econometrics [22 minutes for each presentation]

Lotus Room — Chair: Masahiro Inuiguchi

Why Copulas?

*Vladik Kreinovich, Hung Nguyen, Sriboonchitta Songsak and Olga Kosheleva*

A new measure of monotone dependence by using Sobolev norms for copula

*Hien D. Tran, Uyen H. Pham, Sel Ly and Trung D. Vo*

Western countries' tourist arrivals to Thailand: Estimating Western countries' tourism demand for Thailand at the present of structural change

*Nyo Min and Songsak Sriboonchitta*

Welfare measurement on Thai rice market: A Markov switching Bayesian seemingly unrelated regression

*Pathairat Pastpipatkul, Paravee Maneejuk, Songsak Sriboonchitta*

Modeling daily peak electricity demand in Thailand

*Jirakom Sirisrisakulchai and Songsak Sriboonchitta*

15:20 – 15:50 Coffee break

15:50 – 17:30 Parallel Session A: Fuzzy Clustering and Data Mining [22 minutes for each presentation]

Crystal Room — Chair: Saddaki Miyamoto

A deterministic clustering framework in MMMs-induced fuzzy co-clustering

*Shunnya Oshio, Katsuhiro Honda, Seiki Ubukata and Akira Notsu*

FCM-type co-clustering transfer reinforcement learning for non-Markov processes

*Akira Notsu, Takanori Ueno, Yuichi Hattori, Seiki Ubukata and Katsuhiro Honda*

MMMs-induced fuzzy co-clustering with exclusive partition penalty on selected items

*Takaya Nakano, Katsuhiro Honda, Seiki Ubukata and Akira Notsu*

Clustering data and vague concepts using prototype theory interpreted label semantics

*Zhao Hanqing and Zengchang Qin*

16:00 – 17:30 Parallel Session B: Applied Statistics [22 minutes for each presentation]

Lotus Room — Chair: Hung T. Nguyen

Confidence intervals for the difference between normal means with known coefficients of variation

*Suparat Niwitpong and Sa-Aat Niwitpong*

Approximate confidence interval for the ratio of normal means with a known coefficient of variation

*Wararit Panichkitkosolkul*

Confidence intervals for the ratio of coefficients of variation of the gamma distributions

*Patarawan Sangnawakij, Sa-Aat Niwitpong and Suparat Niwitpong*

A copula-based stochastic frontier model for financial pricing

*Phachongchit Tibprasorn, K. Autchariyapanitkul, Somsak Chaniam and Songsak Sriboonchitta*

17:30 – 18:00 Move to **Champa Island Restaurant**

18:00 – 20:00 **Banquet and Closing Session**

Chair: Masahiro Inuiguchi and Van-Nam Huynh

## SATURDAY, 17TH OCTOBER (morning)

9:00 – 11:30 Scientific Committee Meeting [to be confirmed]

**Excursion and Social Program** (on demand with payment; please contact local organizer at iukm2015@pou.edu.vn for the detail)