## Sunday

**8 September 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:00 – 19:30</td>
<td>Registration &amp; Welcome drink</td>
<td>CIIRC/Penthouse</td>
</tr>
</tbody>
</table>

## Monday

**9 September 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>8:00 – 9:30</td>
<td>Registration</td>
<td>Hotel International</td>
</tr>
<tr>
<td>9:30 – 10:00</td>
<td>Opening ceremony</td>
<td>Hotel International/Congress Hall</td>
</tr>
<tr>
<td>10:00 – 11:00</td>
<td>Keynote 1 Chair: V. Novák</td>
<td>Hotel International/Congress Hall</td>
</tr>
<tr>
<td>11:00 – 11:30</td>
<td>Coffee break</td>
<td>Hotel International</td>
</tr>
<tr>
<td>11:30 – 12:30</td>
<td>Keynote 2 Chair: L. Godo</td>
<td>Hotel International/Congress Hall</td>
</tr>
<tr>
<td>13:00 – 14:30</td>
<td>Lunch</td>
<td>CIIRC/Respirium</td>
</tr>
</tbody>
</table>

### Session 1 Chair: R. Mesiar

**SS 13 – Aggregation functions: recent trends and developments, and applications**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 14:30 – 14:50 | Aggregation of Partial T-Indistinguishability Operators
Tomaso Calvo Sánchez and Pilar Fuster-Parrá | CIIRC/B-670 |
| 14:50 – 15:10 | Characterizing Positive Definite Matrices with T-Norms
Jordi Recasens | |
| 15:10 – 15:30 | Generalized Deviation Functions and Construction of Aggregation Functions
Andrea Stuphanová and Peter Smrek | |
| 15:30 – 15:50 | Cross-Migrative Commutative Aggregation Functions with Respect to Archimedean Triangular Norms
Wenwen Zong, Yong Su and Hua-Wen Liu | |
| 15:50 – 16:10 | Merging Clusters in Summary Structures for Data Stream Mining Based on Fuzzy Similarity Measures
Leonardo Schick, Priscilla de A. Lopes and Heloisa A. Camargo | |

### Session 2 Chair: P. Murinová

**SS 9 – Mathematical Fuzzy Logic**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 14:30 – 14:50 | Translating Classical Probability Logics into Modal Fuzzy Logics
Paolo Baldi, Petr Cintula and Carles Noguera | CIIRC/B-671 |
| 14:50 – 15:10 | Representations of Locally Finite Many-Valued Logics
Brunella Gerla | |
| 15:10 – 15:30 | Modelling Competing Theories
Willem Conradie, Andrew Craig, Alessandra Palmigiano and Nachoem Wijnberg | |
| 15:30 – 15:50 | Quasi-i-Boolean Algebras vs. Quasi-m Boolean Algebras
Afrodita Iorgulescu | |
| 15:50 – 16:10 | A Representation Theorem for Finite Gödel Algebras with Operators
Tommaso Flaminio, Luis Godo and Ricardo Rodríguez | |

### Session 3 Chair: D. Lobo

**SS 4 – Representing and Managing Uncertainty: different scenarios, different tools**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</table>
| 14:30 – 14:50 | New Methods to Compare Cardinalities of IVFSs and Their Applications in Decision Making on Uncertain Data
Krzysztof Dyczkowski and Barbara Pękala | CIIRC/B-770 |
| 14:50 – 15:10 | Uncertainty of Value and Structure
Patrik Eklof and Magnus Löfstrand | |
15:10 – 15:30 Some Remarks on Topological Structures in the Context of Fuzzy Relational Mathematical Morphology
Alexander Sostak and Ingrīda Uļjane
Patryk Żywiec and Anna Stachowiak
15:50 – 16:10 Abductive Reasoning in Normal Residuated Logic Programming via Bipolar Max-Product Fuzzy Relation Equations
David Lobo, M. Eugenia Cornejo and Jesús Medina

Session 4
Chair: P. Grzegorzewski
CIIRC/B-771

SS 14 - Soft Models in Probability and Statistics

16:30 – 16:50 Two Theorems from Extreme Value Theory for Interval Valued Events
Katarína Čunderlíková
16:50 – 17:10 Consistent Inverse Probability and Possibility Propagation
Dominik Hase and Michael Hanss
17:10 – 17:30 Clustering a Body of Evidence Based on Conflict Measures
Andrey Bronевич and Alexander Lepskiy
17:30 – 17:50 Flexible Bootstrap Based on the Canonical Representation of Fuzzy Numbers
Przemysław Grzegorzewski, Olgierd Hryniewicz and Maciej Romaniuk

Session 5
Chair: G. Pereira Dimuro
CIIRC/B-670

SS 13 - Aggregation functions: recent trends and developments, and applications

16:40 – 17:00 Application of Non-Additive Measures and Integrals for Analysis of the Importance of Party Positions for Voting
Alexander Lepskiy and Vladimir Smolov
17:00 – 17:20 A Monotonicity-Preserving Transformation on a Class of Aggregation Functions
Hans De Meyer and Bernard De Baets
17:20 – 17:40 New Aspects of Composition of Interval Valued Fuzzy Relations Used in Medical Decision Support
Krzysztof Balicki, Paweł Drygasi and Barbara Pękala
17:40 – 18:00 A Characterization of Uninorms by Means of a Pre-Order They Induce
Dana Hliněná and Martin Kalina

Session 6
Chair: B. Gerla
CIIRC/B-671

SS 9 - Mathematical Fuzzy Logic

16:40 – 17:00 Computing Generators of Binary Operations from Partial Derivatives
Mirko Navara and Milan Petrík
17:00 – 17:20 Interpretation of Generalized Syllogisms in Fuzzy Natural Logic
Daniela Lintěpilová and Petra Murinová
17:20 – 17:40 On Modeling of Syllogisms with Quantifiers "A few", "Several" and "A little"
Petra Murinová and Vítěz Novák
17:40 – 18:00 Restriction-Based Fuzzy Quantifiers
Antonín Dvořák and Michal Holčapek
18:00 – 18:20 Design of Interval Type 2 Fuzzy Fault-Tolerant Controller for a Non-Minimum Phase System: Application to Quadruple Conical Tank System
Himanshukumar R. Patel and Vipul A. Shah

Session 7
Chair: D. Lobo
CIIRC/B-770

SS 4 - Representing and Managing Uncertainty: different scenarios, different tools

16:40 – 17:00 A Probabilistic Semantics for Unknown Fuzzy Degrees with Monte Carlo Approximation
Libor Běhounek
17:00 – 17:20 On Hidden Conflicts of Belief Functions
Milan Daniel and Václav Kratochvíl
17:20 – 17:40 Type-2 Fuzzy Logic Approach for Overloaded Hosts in Consolidation of Virtual Machines in Cloud Computing
Bruno M. P. Moura, Guilherme B. Schneider, Adenauer C. Yamin, Maurício L. Pilla and Renata H. S. Reiser
17:40 – 18:00 The Improved Interval Weight Estimation Method from a Pairwise Comparison Matrix and the Advantages of Interval Evaluations
Masahiro Inuiguchi and So Komatsu
Session 8  
Chair: P. Orlovs  

16:40 – 17:00  
Automatic Generation of a Type-2 Fuzzy System for Time Series Forecast Based on Genetic Programming  
Marco Antônio da Cunha Ferreira, Ricardo Tanscheit and Marley Vellasco

17:00 – 17:20  
Performance Comparisons of Law Offices and Optimum Allocation of Debt Files Using Z-Fuzzy AHP  
Cengiz Kahraman, Basar Oztaysi and Sezi Cevik Omar

17:20 – 17:40  
Analytic Hierarchy Process- Fuzzy Sorting  
Alessio Ishizaka, Menelas Tasiou and Luis Martinez

17:40 – 18:00  
Solid Waste Disposal Site Selection by Using Neutrosophic Combined Compromise Solution Method  
Ali Karaoğlan and Eda Bolturk

18:00 – 18:20  
Multi-Granular Information-Based Methodology for Smart Building Design: Office Building Application  
Deniz Uztürk, Gökşin Büyüközkan, A. Fahri Negüs and M. Yaman Öztek

Tuesday  
10 September 2019

Session 9  
Chair: M. Holčapek  

SS 21 - Fuzzy transforms: theory and applications to data analysis and image processing

9:30 – 9:50  
On the Relationship Between L-Fuzzifying Approximation Spaces and L-Fuzzifying Pretopological Spaces  
Anand P. Singh and Irina Perfilieva

9:50 – 10:10  
Generalized Fuzzy Projection  
Linh Nguyen

10:10 – 10:30  
Forecasting Cryptocurrency Time Series Using Fuzzy Transform, Fourier Transform and Fuzzy Inference System  
Srdan Jelinek, Ana Puletic, Bratislav Petrović and Pavle Milosević

Session 10  
Chair: M. Štěpnička

Best student's paper candidates

9:30 – 9:50  
Some Remarks on the Generalized Scheme of Reduction to Absurdity and Generalized Hypothetical Syllogism in Fuzzy Logic  
Katarzyna Miś, Michal Baczyński and Piotr Helbin

9:50 – 10:10  
Extension of the Fuzzy Dominance-Based Rough Set Approach Using Ordered Weighted Average Operators  
Marko Palangetić, Chris Cornelis, Salvatore Greco and Roman Slowiński

10:10 – 10:30  
Fuzzy Multiset Clustering for Metagame Analysis  
Alexander Dockhorn, Tony Schwemfeier and Rudolf Kruse

Session 11  
Chair: M. Burda

Applications

9:30 – 9:50  
Extracting Group Decision Making Experts’ Preferences from Debate Transcriptions Using Sentiment Analysis  
Juan Antonio Morente-Molinera, Francisco Javier Cabrerizo, Ignacio J. Pérez, Sergio Alonso and Enrique Herrera-Viedma

9:50 – 10:10  
Fault Tolerant Control Design Based on Takagi–Sugeno Fuzzy Logic: Application to a Three-Tank System  
Himanshukumar R. Patel and Vipul A. Shah

10:10 – 10:30  
Graphical Analysis of the Progression of Atrial Arrhythmia Through an Ensemble of Generative Adversarial Network Discriminators  
Nahuel Costa, Jesús Fernández, Inês Cousse and Luciano Sánchez

Session 12  
Chair: G. Castellano

SS 8 – Evolving and adaptive fuzzy models for data streams

9:30 – 9:50  
Granular Evolving Min–Max Fuzzy Modeling  
Alisson Porto and Fernando Gomide

9:50 – 10:10  
Incremental Learning of Fuzzy Decision Trees for Streaming Data Classification  
Riccardo Pecori, Pietro Ducange and Francesco Marcelloni

10:10 – 10:30  
Credit Card Fraud Detection by Dynamic Incremental Semi-Supervised Fuzzy Clustering  
Gabriella Casalino, Giovanna Castellano and Corrado Mencar

10:30 – 11:00  
Coffee break

Session 13  
Chair: I. Perfilieva

SS 21 - Fuzzy transforms: theory and applications to data analysis and image processing

11:00 – 11:20  
Modified Multivariate F-Transform Based on B-Splines
Martins Kokainis and Svetlana Asmuss
11:20 – 11:40
Relational Variants of Categories of Fuzzy Sets Defined by Monads
Jiří Močkoř
11:40 – 12:00
Dimensionality Reduction and Its F-Transform Representation
Jiří Janeček and Irina Perfiljeva
12:00 – 12:20
Novel Numerical Solution of Black–Scholes Models Based on the F-Transform and Variational Methods
Michal Holčapek and Badek Valášek
12:20 – 12:40
Integral Transformations for Lattice–Valued Functions
Michal Holčapek and Viec Bui
12:40 – 13:00
On L¹–Valued F-Transforms and L¹–Valued Fuzzy Rough Sets
Abha Tripathi, S. P. Tiwari and Anand P. Singh

Session 14
Chair: R. Rodríguez-López
CIIRC/B-671

11:00 – 11:20
Solvability of Fuzzy Relational Equations Employing Undefined Values
Nhung Cao
11:20 – 11:40
Mathematical Programming Tools for Optimization under Fuzzy Relation Constraints
Reinis Lama and Svetlana Asmuss
11:40 – 12:00
A Reliable Scheme for Solving Fuzzy Differential Equations by Applying the CADNA Library Based on the Fuzzy Predictor–Corrector Methods
Mohammad Ali Fariborzi Araghi and Hasan Barzegar
12:00 – 12:20
Involving Fuzzy Metrics for Multi–Level Multi–Objective Linear Programming Problems
Olga Grigorenko
12:20 – 12:40
Many–Level Fuzzy Rough Approximation Spaces Induced by Many–Level Fuzzy Preorders and the Related Ditopological Structures
Alexander Šostak, Ingrīda Uļjane and Aleksandrs Elkins
12:40 – 13:00
On Fuzzy Approximation Operators and Fuzzy Transformation Systems
Satapua Mahato and S. P. Tiwari

Session 15
Chair: U. Kaymak
CIIRC/B-770

SS 2 – Fuzzy Systems in Business and Economics

11:00 – 11:20
Fuzzy Natural Logic in Mortality Rate Prediction
Soheyla Mirshahi, Linh Nguyen and Viček Novák
11:20 – 11:40
Hospital Location Selection Using Spherical Fuzzy TOPSIS
Cengiz Kahraman, Fatma Kurtlu Gündogdu, Sezi Cevik Omar and Basar Oztayy
11:40 – 12:00
Pattern Classification on Complex System Using Modified Gustafson–Kessel Algorithm
Miguel Khatounian Filho, Leo Koki and Renato Aguiar
12:00 – 12:20
Fuzzy Association Rules for Text Mining. A Use Case Using Twitter to Analyse the US Presidential Election
Jose Angel Díaz, M. Dolores Ruiz and Maria J. Martin-Bautista
12:20 – 12:40
Outlier Detection in Location Based Systems by Using Fuzzy Clustering
Basar Oztayy, Sezi Cevik Omar and Cengiz Kahraman
12:40 – 13:00
Zhen Zhang, Junliang Gao and Wenyu Yu

Session 16
Chair: N. Yarushkina
CIIRC/B-771

SS 17 – Soft Social Computing and Network Science

11:00 – 11:20
Fuzzy Logic–Predicate Network
Tatiana Kosovskaya
11:20 – 11:40
Artificial Intelligence in the Context of Psychological Security: Theoretical and Practical Implications
Alexey N. Averkin, Darya Yu. Bazarkina, Konstantin A. Pantserev and Evgeny N. Pashentsev
11:40 – 12:00
Socially Significant Behavior Model with Hidden Variables Based on Bayesian Belief Networks
Aleksandra Toropova, Maksim Abramov and Nikita Khartinov
12:00 – 12:20
Extraction and Analysis Time Series Of Production Capacity Indicators
Anton Romanov, Irina Moshkina and Nadezhda Yarushkina
12:20 – 12:40
On the Problem of Possibilistic–Probabilistic Optimization with Constraints on Possibility/Probability in the Case of the Weakest T–Norm
Yulia Egorova and Alexandr Yazenin
12:40 – 13:00
Fuzzy Applications in Selected Aircraft On–board System
Norbert Grzesik, Janusz Ćwiklak, Mariusz Zieja and Grzegorz Kozłowski

13:00 – 14:30
Lunch
CIIRC/Respirium
<table>
<thead>
<tr>
<th>Session 17</th>
<th>Chair: M. Daňková</th>
<th>CHIRC/B-670</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision making</td>
<td></td>
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</tr>
<tr>
<td>14:30 – 14:50</td>
<td>Aggregation of Credit Risk Ratings Based on a Fuzzy Metric</td>
<td>Pavels Orlovs and Svetlana Asmuss</td>
</tr>
<tr>
<td>15:10 – 15:30</td>
<td>Ranking of Independent and Dependent Fuzzy Numbers by Two Ranking Methods and Their Use in Fuzzy MCDA</td>
<td>Boris Yatsalo, Alexander Korobov and Luis Martinez</td>
</tr>
<tr>
<td>15:30 – 15:50</td>
<td>Modeling CDC in a Fuzzy Description Logic: A Comparison of Different Approaches</td>
<td>Martin Unold and Christophe Cruz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session 18</th>
<th>Chair: J. Kupka</th>
<th>CHIRC/B-671</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 23 - Fuzzy dynamical systems</td>
<td></td>
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</tr>
<tr>
<td>15:10 – 15:30</td>
<td>Zadeh’s Extension of Piecewise Linear Functions</td>
<td>Nicole Škorupová and Jiří Kupka</td>
</tr>
<tr>
<td>15:30 – 15:50</td>
<td>Entropies of (Fuzzy) Dynamical Systems</td>
<td>Jose Cánovas and Jiří Kupka</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session 19</th>
<th>Chair: S. Schockaert</th>
<th>CHIRC/B-770</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine learning</td>
<td></td>
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<tr>
<td>14:30 – 14:50</td>
<td>Interval Type-2 Fuzzy Systems as Deep Neural Network Activation Functions</td>
<td>Aykut Beke and Tufan Kumbasar</td>
</tr>
<tr>
<td>14:50 – 15:10</td>
<td>Universal Preprocessing for Neural Networks Given by Image Represented by a Fuzzy Function</td>
<td>Petr Hurtík, Vojtěch Molek and Jan Hills</td>
</tr>
<tr>
<td>15:10 – 15:30</td>
<td>Binary Classification Using the Sugeno Integral</td>
<td>Sadegh Abbaszadeh and Eyke Hüllermeier</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session 20</th>
<th>Chair: N. Yarushkina</th>
<th>CHIRC/B-771</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 17 - Soft Social Computing and Network Science</td>
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</tr>
<tr>
<td>14:30 – 14:50</td>
<td>An Approach to Vocabulary Expansion for Neural Network Language Model by Means of Hierarchical Clustering</td>
<td>Pawel Dudarin and Nadezhda Yarushkina</td>
</tr>
<tr>
<td>14:50 – 15:10</td>
<td>Prediction Quality of Bayesian Belief Network Model for Risky Behavior: Comparison of Subsamples with Different Rates</td>
<td>Alena Suvorova and Alexander Tulupyev</td>
</tr>
<tr>
<td>15:10 – 15:30</td>
<td>Sentiment Analysis in Social Networks: A Methodology Based on the Latent Dirichlet Allocation Approach</td>
<td>Domenico Santaniello, Francesco Colace, Marco Lombardi, Francesco Pascali and Fabio Clarizia</td>
</tr>
</tbody>
</table>

15:50 – 16:20 Coffee break

<table>
<thead>
<tr>
<th>Keynote 3</th>
<th>Chair: M. Reformat</th>
<th>CHIRC/Respirium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>16:20 – 17:20</td>
<td>How Computer Vision Inadvertently Embraced Zadeh’s Ideas</td>
<td>Carlos Lopez-Molina</td>
</tr>
</tbody>
</table>

17:30 – 18:30 EUSFLAT Assembly

Wednesday 11 September 2019

<table>
<thead>
<tr>
<th>Keynote 4</th>
<th>Chair: B. De Baets</th>
<th>CHIRC/Red Hall</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 – 10:00</td>
<td>Towards Structured Vector Representations of Knowledge</td>
<td>Steven Schockaert</td>
</tr>
<tr>
<td>Session 21</td>
<td>Chair: C. Lopez-Molina</td>
<td>CIIRC/B-670</td>
</tr>
<tr>
<td>SS 22 - Soft Computing Techniques in Image Processing</td>
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<tr>
<td>10:50 – 11:10</td>
<td>A New Approach to Color Edge Detection</td>
<td>Pablo A. Flores-Vidal, Daniel Gómez, Javier Castro, Guillermo Villarino and Javier Montero</td>
</tr>
<tr>
<td>11:10 – 11:30</td>
<td>Image Inpainting Using Interpolation Methods Combined with Fuzzy Transform</td>
<td>Martina Daréková and Viktor Pavlíška</td>
</tr>
</tbody>
</table>

| Session 22 | Chair: P. Cordero | CIIRC/B-671 |
|SS 5 - Formal Concept Analysis and Applications|
|10:30 – 10:50 | Formal Context Analysis and Sequences of Orthopairs | Stefania Boffa and Brunella Gerla |
|10:50 – 11:10 | Formal Equivalence Analysis | Francisco J. Valverde-Albacete, Carmen Pérez-Moreno, Pablo Cordero and Manuel Ojeda-Aciego |
|11:10 – 11:30 | Towards Fuzzy Relational Galois Connections between Fuzzy T– Digraphs | Inma P. Cabrera, Pablo Cordero, Emilio Mañero-Velasco and Manuel Ojeda-Aciego |

| Session 23 | Chair: G. De Tré | CIIRC/B-770 |
|SS 1 - Computational Intelligence in Database and Information Retrieval Systems|
|10:50 – 11:10 | Mining Data Quality Rules Based on T–Dependence | Toon Boeckling, Antoon Bronselaer and Guy De Tré |

| Session 24 | Chair: J. Serrano | CIIRC/B-771 |
|SS 19 - Soft Computing on the Web|
|11:10 – 11:30 | Computing Sentiment Analysis through Aspect–Based Fuzzy Aggregations | Jesus Serrano-Guerrero, Jose A. Olivas and Francisco P. Romero |

| Session 25 | Chair: C. Lopez-Molina | CIIRC/B-670 |
|SS 22 - Soft Computing Techniques in Image Processing|
|11:40 – 12:00 | Modeling Implicit Feedback and Latent Visual Features for Machine-Learning Based Recommendation | Yue Guan, Qiong Wei, Guoqing Chen and Xunhua Guo |
|12:00 – 12:20 | Dragonflies Classification with Convolutional Neural Networks | Vojtěch Molek, Stanislav Údáma and Michal Hykel |

| Session 26 | Chair: V. Kreinovich | CIIRC/B-671 |
|SS 25 - Inter-Relation Between Interval and Fuzzy Techniques|
|11:40 – 12:00 | An Approach Towards Image Edge Detection Based on Interval–Valued Fuzzy Mathematical Morphology and Admissible Orders | Peter Sussner and Lisbeth Corbacho Carazas |
|12:00 – 12:20 | Physics’ Need for Interval Uncertainty and How It Explains Why Physical Space Is (at Least) 3-Dimensional | Olga Kosheleva and Vladik Kreinovich |
|12:20 – 12:40 | Propagation of Data Uncertainty to Confidence of Fuzzy Association Rules | Michal Burda and Viktor Pavlíška |
Session 27
Chair: O. Cordon

SS 3 - Fuzzy methods in Data Mining and Knowledge Discovery
11:40 – 12:00 Personalized Linguistic Summaries in Smartphone-Based Monitoring of Bipolar Disorder Patients
Katarzyna Kazmurek-Majer, Olgierd Hryniewicz, Monika Dominiak and Łukasz Święcicki
Carlos Fernandez-Basso, M. Dolores Ruiz, Miguel Delgado and Maria J. Martin-Bautista
12:20 – 12:40 Bigfoot Climbing the Hill with ILP to Grow Patterns in Fuzzy Tensors
Lucas Maciel, Jônatas Alves, Vinícius Fernandes dos Santos and Loïc Cerf

Session 28
Chair: L. Kóczy

SS 7 - Fuzzy graphs and discrete models
11:40 – 12:00 Managing Temporal Uncertainty in Multi-Mode Z-number Fuzzy Graph Structures
Margarita Knyazeva, Alexander Bozhenyuk and Uzay Kaymak
12:00 – 12:20 Algorithm for Finding Domination Set in Intuitionistic Fuzzy Graph
Alexander Bozhenyuk, Margarita Knyazeva and Igor Rezenberg
12:20 – 12:40 Stability of Fuzzy Cognitive Maps with Interval Weights
István Á. Harmati and László T. Kóczy

12:40 – 14:00 Lunch
14:00 – 18:30 Free afternoon
17:00 – 18:30 Guided tours (optional)
18:30 – 23:30 Social dinner

Thursday 12 September 2019

Keynote 5
Chair: I. Perfilieva

9:30 – 10:30 Fuzzy differential equations: on the properties of their solutions and some applications
Rosana Rodríguez-López
10:30 – 11:00 Coffee break

Session 29
Chair: L. Běhounek

Fuzzy set theory
11:00 – 11:20 Transitivity Properties of Ternary Fuzzy Relations
Lemaouna Zedam and Bernard De Baets
11:20 – 11:40 Missing Values and Indeterminable Values in Fuzzy Relational Compositions
Nhung Cao
11:40 – 12:00 Tools to Obtain T-Norms on Bounded Lattices
Carlos Bejines López, María Jesús Chasco Ugarte, Jorge Elorza Barbajero and Vladimir Kobia
12:00 – 12:20 The Number of Triangular Norms on Some Special Lattices
Carlos Bejines López, Michaela Brutenicova, María Jesús Chasco Ugarte, Jorge Elorza Barbajero and Vladimir Janis
Monica Matzenauer, Renata Reiser, Helida Santos and Benjamin Bedregal

Session 30
Chair: A. Dvořák

SS 13 - Aggregation functions: recent trends and developments, and applications
11:00 – 11:20 Learning to Aggregate: Tackling the Aggregation/Disaggregation Problem for OWA
Vitalik Melnikov and Eyke Huellermeier
11:20 – 11:40 A Local Contrast and Local Properties of a Fuzzy Relation
Barbara Pękala and Urszula Bentkowska
11:40 – 12:00 Geometrical Differences in the Generalizations of Monotonicity Conditions
Laura De Miguel, Mikel Sesma-Sara, Javier Fernandez, Radko Mesiar and Humberto Bustince
12:00 – 12:20 Aggregation Functions Based on the Choquet Integral Applied to Image Resizing
Jesús C. S. Bueno, Camila Alves Dias, Graciáliz P. Demuro, Helida Santos, Eduardo N. Borges, Giancarlo Lucca and Humberto Bustince
<table>
<thead>
<tr>
<th>Session 31</th>
<th>Chair: J. Močkoř</th>
<th>CIIRC/B-770</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various topics</td>
<td>11:00 – 11:20</td>
<td>Network Granulation Approach for Road Traffic Anomalies Forecasting: A Case Study</td>
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<tr>
<td></td>
<td>11:40 – 12:00</td>
<td>On a Category of Deterministic Fuzzy Automata</td>
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<td>12:00 – 12:20</td>
<td>On L-Fuzzy Partitioned Automata</td>
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<td>12:20 – 12:40</td>
<td>Forty Years of Fuzzy Sets and Systems: A Bibliometric Analysis</td>
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<thead>
<tr>
<th>Session 32</th>
<th>Chair: L. Martínez</th>
<th>CIIRC/B-771</th>
</tr>
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<tbody>
<tr>
<td>Decision making</td>
<td>11:00 – 11:20</td>
<td>A Debate Model for Cooperative Agents to Achieve Common Objectives</td>
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<td>11:40 – 12:00</td>
<td>Generating a Fuzzy Rule Based Classification System by Genetic Learning of Granularity Level Using TOPSIS</td>
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<td>12:00 – 12:20</td>
<td>2-Tuple Linguistic Integrated Group Decision Making Methodology for E-Commerce Strategy Selection</td>
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<td>12:20 – 12:40</td>
<td>Prioritizing the Strategies to Enhance Smart City Logistics by Intuitionistic Fuzzy CODAS</td>
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<td>12:40 – 14:00</td>
<td>Lunch</td>
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<thead>
<tr>
<th>Session 33</th>
<th>Chair: M. Baczynski</th>
<th>CIIRC/B-670</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 18 - Fuzzy Implication Functions</td>
<td>14:00 – 14:20</td>
<td>Fuzzy Implicators Related to (Quasi-)Copulas</td>
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<td>14:20 – 14:40</td>
<td>Ru-Implications Satisfying U-Modus Tollens</td>
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<td>14:40 – 15:00</td>
<td>Graphical Characterizations of Discrete Ru and (U,N)-Implications Derived from Idempotent Uninorms</td>
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<td>15:00 – 15:20</td>
<td>U-Modus Ponnets for (U,N)-Implications</td>
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<tr>
<th>Session 34</th>
<th>Chair: M. Navara</th>
<th>CIIRC/B-671</th>
</tr>
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<tbody>
<tr>
<td>SS 15 - Workshop on Quantum Structures</td>
<td>14:00 – 14:20</td>
<td>Towards a More Efficient Representation of Functions in Quantum and Reversible Computing</td>
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<td>14:20 – 14:40</td>
<td>Orthogonality Spaces Allowing Gradual Transitions</td>
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<td>14:40 – 15:00</td>
<td>Interpolation Properties, Maximality Property and Weakly Jauch–Piron States in Effect Algebras</td>
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<td>15:00 – 15:20</td>
<td>Nuclei and Conuclei on Girard Posets</td>
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<tr>
<th>Session 35</th>
<th>Chair: J. Kupka</th>
<th>CIIRC/B-770</th>
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</thead>
<tbody>
<tr>
<td>SS 3 - Fuzzy methods in Data Mining and Knowledge Discovery</td>
<td>14:00 – 14:20</td>
<td>Extending Clusters of Social Network Users with Deep Relations</td>
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<td>14:20</td>
<td>36</td>
<td>Confirmation Measures in Regression with Linguistic Rules</td>
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<tr>
<td>14:40</td>
<td>36</td>
<td>Content Determination for Natural Language Descriptions of Predictive Bayesian Networks</td>
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<td>15:00</td>
<td>36</td>
<td>Explaining Computer Predictions with Augmented Appraisal Degrees</td>
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<td>15:20</td>
<td>36</td>
<td>Analysis of Privacy Profiles Applying Fuzzy Clustering Techniques</td>
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<tr>
<td>15:00</td>
<td>36</td>
<td>Content Determination for Natural Language Descriptions of Predictive Bayesian Networks</td>
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<tr>
<td>16:00</td>
<td>37</td>
<td>Order Fulfillment Performance Evaluation in Supply Chain Management under Intuitionistic Fuzzy Environment</td>
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<tr>
<td>16:40</td>
<td>37</td>
<td>Genetic Optimization of Intuitionistic Fuzzy Integration Systems for Modular Neural Recognition Systems</td>
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<td>17:00</td>
<td>37</td>
<td>Intercriteria Fuzzy MCDM Analysis in Paralympics Swimming Classification</td>
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<td>15:00</td>
<td>36</td>
<td>A New Intuitionistic Fuzzy–Fractal Dimension Approach for Forecasting Financial and Economic Time Series</td>
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<td>15:40</td>
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<td>Coffee break</td>
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<tr>
<td>16:10</td>
<td>37</td>
<td>Study on n-Dimensional R-Implications</td>
</tr>
<tr>
<td>16:30</td>
<td>37</td>
<td>First Steps Towards the Characterization of (S,N)-Implications with a Non-Continuous Fuzzy Negation</td>
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<td>16:50</td>
<td>37</td>
<td>Exchange Principle of Ordinal Sums of Fuzzy Implications</td>
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<tr>
<td>16:10</td>
<td>38</td>
<td>Minimizing Quantum Structures with Small Spaces of Measures</td>
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<tr>
<td>16:30</td>
<td>38</td>
<td>For Quantum and Reversible Computing, Intervals Are More Appropriate Than General Sets, And Fuzzy Numbers Than General Fuzzy Sets</td>
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<tr>
<td>16:50</td>
<td>38</td>
<td>Towards Memory Access Optimization in Quantum Computing</td>
</tr>
<tr>
<td>16:10</td>
<td>39</td>
<td>A Hybrid Model of Gene Expression Profiles Reducing Based on the Complex Use of Fuzzy Inference System and Clustering Quality Criteria</td>
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<td>16:30</td>
<td>39</td>
<td>Exploiting Particle Swarm Optimization to Attune Strong Fuzzy Partitions Based on Cuts</td>
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<td>16:50</td>
<td>39</td>
<td>Explainable Artificial Intelligence for Kids</td>
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<td>16:10</td>
<td>40</td>
<td>Interpolative Boolean Algebra for Generalizations of Intuitionistic Fuzzy Sets</td>
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<td>16:30</td>
<td>40</td>
<td>A New Method for Attributes Selection in Intuitionistic Fuzzy Models</td>
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Friday 13 September 2019

Session 41
Chair: Y. Chalco-Cano

SS 24 - Fuzzy mathematical analysis and its applications
9:30 – 9:50 A Better Approach for Solving a Fuzzy Multiobjective Programming Problem
   Maria Beatriz Hernández Jiménez, Rafaela Osuna-Gómez, Yuriel Chalco-Cano and Gabriel Ruiz-Garzón
   Yuriel Chalco-Cano, Tiago Mendonça and Heriberto Román Flores
10:10 – 10:30 A Note on Defuzzification of Interval Type-2 Fuzzy Sets via Aumann Integration
   Heriberto Román Flores, Juan Carlos Figueroa-García and Yuriel Chalco-Cano

Session 42
Chair: R. Pérez Fernández

SS 16 - Perspectives and challenges in data aggregation
9:30 – 9:50 A Preliminary Inquiry into the Aggregation of Compositional Data
   Raúl Pérez-Fernández and Bernard De Baets
9:50 – 10:10 Aggregation on Sets Equipped with a Betweenness Relation
   Bernard De Baets and Raúl Pérez-Fernández
10:10 – 10:30 Ranking-Based knn (rknn): A Method for Avoiding the Worst Distance Metrics in knn
   Noelia Rico, Raúl Pérez-Fernández and Irene Díaz
10:30 – 10:50 Fuzzy Approach Based Money Laundering Risk Assessment
   Márk Krastíč

Session 43
Chair: P. Hurtík

Machine learning
9:30 – 9:50 Semi-Supervised Classification of Scientific Papers With Graph Convolutional Networks and Topic Modeling
   Jan Hůla, David Mojžíšek and Miroslav Kubát
9:50 – 10:10 Scalarization for Approximate Multiobjective Multiclass Support Vector Machine Using the Large-k Norm
   Yoshifumi Kusunoki and Keiji Tatsumi
10:10 – 10:30 Emotion Recognition from Speech Signal Using Fuzzy Clustering
   Stefano Rovetta, Zied Mnasri, Francesco Masulli and Alberto Caci
10:30 – 10:50 Explainable Neuro-Fuzzy Recurrent Neural Network to Predict Colorectal Cancer with Different Timeframe Data
   Servio Lima, Luis Terán and Edy Portmann

Session 44
Chair: A. Dvořák

SS 12 - Special Session on Fuzzy Logic Applications for the Digital Economy and Society
9:30 – 9:50 Logical Clustering Approach for Analysing Digital Economy and Society Performance of Countries
   Jovana Rakićević, Aleksandar Rakićević and Ana Poledica
9:50 – 10:10 Fuzzy Modeling to 'Understand' Personal Preferences of mHealth Users: A Case Study
   Raoul Nuijten, Uzay Kaymak, Pieter Van Gorp, Monique Simons, Pauline Van Den Berg and Pascale Le Blanc
10:10 – 10:30 Experton Approach to Vague Information in Portfolio Selection Problem with Many Views
   Aleksandra Rutkowska and Marcin Bartkowiak
10:30 – 10:50 Risk-Sensitive Decision Making with Constraints of Coherent Risk Measures in Fuzzy and Stochastic Environment
   Yuji Yoshida

10:50 – 11:20 Coffee break

Keynote 6
Chair: V. Novák

11:20 – 12:20 Graded Model Theory: A Logical Study of Weighted Structures
   Carles Noguera

12:20 – 12:30 Closing ceremony

12:30 – 14:00 Farewell party / Lunch