17th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems – IPMU 2018

Cádiz, Spain, June 11th – 15th, 2018

MONDAY 11th

M. 8:30–9:30   Registration desk open

M. 9:30–10:00   Welcome

M. 10:00-11:00 **Plenary talk: Hypothesis Testing as a Game**
                Speaker: Prof. Glenn Shafer
                Chairperson: Prof. Ronald R. Yager

M. 11:00-11:30   Coffee Break

M. 11:30-13:30 **Session 11.B.1: SS.2 Aggregation Operators, Fuzzy Metrics and Applications I**
                Chairperson: Tomasa Calvo

Efficient Binary Fuzzy Measure Representation and Choquet Integral Learning.
Muhammad Aminul Islam, Derek Anderson, Xiaoxiao Du, Tomothy Havens and Christian Wagner.

Mortality Rates Smoothing Using Mixture Function.
Samuel Hudec and Jana Špirková.

Nullnorms and t-operators on bounded lattices: coincidence and differences.
Slavka Bodjanova and Martin Kalina.

On the use of fuzzy preorders in multi-robot task allocation problem.
José Guerrero, Juan-José Miñana and Óscar Valero.

On the problem of aggregation of partial T-indistinguishability operators.
Tomasa Calvo Sánchez, Pilar Fuster-Parra and Óscar Valero.

M. 11:30-13:30
Chairperson: Pablo J. Cordero

Study of the relevance of objects and attributes of L-fuzzy contexts using overlap indexes.
Cristina Alcalde and Ana Burusco.

FCA attribute reduction in information systems.
María José Benítez-Caballero, Jesús Medina and Eloísa Ramírez-Poussa.

Formal Concept Analysis and structures underlying Quantum Logics.
Ondrej Krídlo and Manuel Ojeda-Aciego.

Directness in Fuzzy Formal Concept Analysis.
Pablo Cordero, Manuel Enciso and Ángel Mora.

Formal independence analysis.
Francisco José Valverde Albacete, Carmen Peláez Moreno, Inma P. Cabrera, Pablo Cordero and Manuel Ojeda-Aciego

Spatio-temporal Drought Identification through Mathematical Morphology.
Hilde Vernieuwe, Bernard De Baets and Niko Verhoest.

M. 11:30-13:30 Session 11.B.3: SS.11. Fuzzy methods in Data Mining and Knowledge Discovery I
Chairperson: M. Dolores Ruiz

Fuzzy Analysis of Sentiment Terms for Topic Detection Process in Social Networks.
Karel Gutiérrez-Batista, Jesús R. Campaña, María-Amparo Vila and María J. Martin-Bautista.

Fuzzy association rules mining using Spark.
Carlos Fernández-Basso, M. Dolores Ruiz and María J. Martin-Bautista.

A Typology of Data Anomalies.
Ralph Foorthuis.

Two-sample dispersion tests for interval-valued data.
Przemyslaw Grzegorzewski.

IF-CLARANS: Intuitionistic fuzzy Algorithm for Big data clustering.
Hechmi Shili and Lotfi Ben Romdhane.

Semi-supervised fuzzy c-means variants: a study on noisy label supervision.
Violaine Antoine and Nicolas Labroche.

M. 11:30-13:30 Session 11.B.4: General Track
Chairperson: Martin Stepnicka

Singular Outliers: Finding Common Observations with an Uncommon Feature.
Mark Pijnenburg and Wojtek Kowalczyk.

Operational Measurement of Data Quality.
Antoon Bronselaer, Joachim Nielandt, Toon Boeckling and Guy De Tré.

Randomness of Data Quality Artifacts.
Toon Boeckling, Antoon Bronselaer and Guy De Tré.

Tag-based User Fuzzy Fingerprints for Recommender Systems.
André Carvalho, Pável Calado and Joao Paulo Carvalho.

M. 13:30-15:00 Lunch

M. 15:00-16:30 Round Table: Homage Lotfi A. Zadeh

Chairperson: Ronald Yager
Panelists: Bernadette Bouchon-Meunier, Didier Dubois, Janusz Kacprzyk, Rudolf Kruse, Rudolf Seising, Luis Magdalena.

M. 16:30-16:50 Coffee Break

M. 16:50-18:20 Session 11.C.1: SS.2 Aggregation Operators, Fuzzy Metrics and Applications II
Chairperson: Tomasa Calvo

What is the aggregation of a partial metric and a quasi-metric?
Juan-José Miñana and Óscar Valero.

Generalized Farlie-Gumbel-Morgenstern copulas.
Anna Kolesárová, Radko Mesiar and Susanne Saminger-Platz

Metrics for tag cloud evaluation.
Úrsula Torres Parejo, Jesús R. Campaña, Maria-Amparo Vila and Miguel Delgado.

Uninorms that are neither conjunctive nor disjunctive on bounded lattices.
Gül Deniz Çaylı.

M. 16:50-18:20 Session 11.C.2: SS.28. Tri-partitions and uncertainty
Chairpersons: Davide Ciucci and Yiyu Yao

An Efficient Gradual Three-way Decision Cluster Ensemble Approach.
Hong Yu and Guoyin Wang.

Modes of Sequential Three-Way Classifications.
Yiyu Yao, Mengjun Hu and Xiaofei Deng.
Determining Strategies in Game-theoretic Shadowed Sets.
Yan Zhang and JingTao Yao.

Three-way and Semi-Supervised Decision Tree Learning Based on Orthopartitions.
Andrea Campagner and Davide Ciucci.

M. 16:50-18:20 Session 11.C.3: SS.11. Fuzzy methods in Data Mining and Knowledge Discovery II
Chairperson: M. Dolores Ruiz

Towards an App based on FIWARE Architecture and Data Mining with Imperfect Data.
José M. Cadenas, M. Carmen Garrido and Cristina Villa.

A Fuzzy Close Algorithm for Mining Fuzzy Association Rules.
Régis Pierrard, Jean-Philippe Poli and Céline Hudelot.

A 2D-approach towards the Detection of Distress using Fuzzy K-Nearest Neighbor.
Daniel Machanje, Joseph Orero and Christophe Marsala.

Datil: Learning Fuzzy Ontology Datatypes.
Ignacio Huitzil, Umberto Straccia, Natalia Díaz-Rodríguez and Fernando Bobillo.

M. 16:50-18:20 Session 11.C.4: SS.29. Uncertainty in medicine
Chairperson: Anna Stachowiak

Modelling Medical Uncertainties with Use of Fuzzy Sets and Their Extensions.
Patryk Żywica.

An uncertainty aware medical diagnosis supportsystem.
Krzysztof Dyczkowski, Anna Stachowiak, Andrzej Wójtowicz and Patryk Żywica.

Diverse classes of interval-valued aggregation functions in medical diagnosis support.
Urszula Bentkowska and Barbara Pękala.

On Fuzzy Compliance for Clinical Protocols.
Anna Wilbik, Ivo Kuiper, Walther van Mook, Dennis Bergmans, Serge Heines and Irene Vanderfeesten.

M. 20:00   Welcome cocktail

TUESDAY 12th

Tu. 9:00-10:00 Plenary talk: Uncertainty Management with Fuzzy Sets, Rough Sets, Interval Sets, Shadowed Sets, and Three-Way Decisions
Speaker: Prof. Yiyu Yao
Chairperson: Prof. Jesús Medina

Tu. 10:00-11:00 Session 12.A.1: SS.4. Current techniques to model, process and describe time series.
Chairpersons: Juan Moreno-García and Luis Rodríguez-Benítez

Forecasting energy demand by clustering smart metering time series
Christian Bock.

Linguistic description of the evolution of stress level using fuzzy deformable prototypes.
Francisco P. Romero, José A. Olivas and Jesús Serrano-Guerrero.

Model averaging approach to forecasting the general level of mortality.
Marcin Bartkowiak, Katarzyna Kaczmarek-Majer, Aleksandra Rutkowska and Olgierd Hryniewicz.

Tu. 10:00-11:00 Session 12.A.2: SS.25. Rough and Fuzzy Similarity Modelling Tools I
Chairperson: Lukasz Sosnowski

Similarity-Based Accuracy Measures for Approximate Query Results.
Agnieszka Chądzyńska-Krasowska.

Object [Re]Cognition with Similarity.
Łukasz Sosnowski and Julian Skirzyński.

How to Match Jobs and Candidates - A Recruitment Support System Based on Feature Engineering and Advanced Analytics.
Andrzej Janusz, Sebastian Stawicki, Michał Drewniak, Krzysztof Ciebiera, Dominik Ślęzak and Krzysztof Stencel.

Tu. 10:00-11:00 Session 12.A.3: SS.5. Decision Making modeling and applications I
Chairperson: Rocío de Andrés Calle

On the structure of acyclic binary relations.
José C. R. Alcantud, María J. Campión, Juan C. Candeal, Raquel G. Catalán and Esteban Induráin.

Extracting Decision Rules from Qualitative Data via Sugeno Utility Functionals.
Quentin Brabant, Miguel Couceiro, Didier Dubois, Henri Prade and Agnès Rico.

An IoT Control System for wind power generators.
Marouane Salhaoui, Mounir Arioua, Antonio Guerrero-González and María Socorro García Cascales.

Tu.10:00-11:00 Session 12.A.4: SS.2 Aggregation Operators, Fuzzy Metrics and Applications III
Chairperson: Tomasa Calvo

On the migrativity property for uninorms and nullnorms.
Emel Aşıcı.

Comparison of Fuzzy Integral-Fuzzy Measure based Ensemble Algorithms with the State-of-the-art Ensemble Algorithms.
Utkarsh Agrawal, Tony Pinar, Christian Wagner, Timothy Havens, Daniele Soria and Jonathan Garibaldi.

Application of Aggregation Operators to Assess the Credibility of User-Generated Content in Social Media.
Gabriella Pasi and Marco Viviani.

Tu. 11:00-11:30   Coffee Break

Tu. 11:30-13:30 Session 12.B.1: SS.27. Soft Computing in Information Retrieval and
Sentiment Analysis.
Chairperson: Jesús Serrano Guerrero

Obtaining WAPO-Structure through Inverted Indexes.
Úrsula Torres-Parejo, Jesús Roque Campaña, María Amparo Vila and Miguel Delgado.

Automatic Expansion of Spatial Ontologies for Geographic Information Retrieval.
Manuel E. Puebla-Martínez, José M. Perea-Ortega, Alfredo Simón-Cuevas and Francisco P. Romero.

Increasing Performance via Gamification in a Volunteer-Based Evolutionary Computation System.
Mario García-Valdéz, Juan J. Merelo, Lucero Lara and Pablo García-Sánchez.

Using syntactic analysis to enhance aspect based sentiment analysis.
Juan Moreno-García and Jesús Rosado.

A probabilistic author-centered model for Twitter discussions.
Teresa Alsinet, Josep Argelich, Ramón Béjar, Francesc Esteva and Lluís Godo.

A concept-based text analysis approach using knowledge graphs.
Wenny Hojas-Mazo, Alfredo Simón-Cuevas, Manuel De la Iglesia Campos, Francisco P. Romero and José A. Olivas.

Tu. 11:30-13:30 Session 12.B.2: SS.25. Rough and Fuzzy Similarity Modelling Tools II
Chairperson: Marcin Szczuka

Defuzzyfication in Interpretation of Comparator Networks.
Łukasz Sosnowski and Marcin Szczuka.

A Comparison of Characteristic Sets and Generalized Maximal Consistent Blocks in Mining Incomplete Data.
Patrick G. Clark, Cheng Gao, Jerzy W. Grzymala-Busse and Teresa Mroczek

Rules Induced from Rough Sets in Information Tables with Continuous Values.
Michinori Nakata, Hiroshi Sakai and Keitarou Hara.

A Linear Model for Three-Way Analysis of Facial Similarity.
Daryl Hepting, Hadeel Bin Amer and Yiyu Yao.

Empirical Comparison of Distances for Agglomerative Hiearchical Clustering.
Shusaku Tsumoto.

Attribute Reduction of Set-valued Decision Information System.
Jun Hu, Siyu Huang and Rui Shao.

Tu. 11:30-13:30 Session 12.B.3: SS.5. Decision Making modeling and applications. II
Chairperson: María Dolores García-Sanz

Ideal and Real Party Positions in the 2015-2016 Spanish General Elections.
M.D. García-Sanz, I. Llamazares and M.A. Manrique.

DNBMA: A double normalization-based multi-aggregation method.
Huchang Liao, Xingli Wu and Francisco Herrera.

Design of a Decision Support System for Buried Pipeline Corrosion Assessment.
Laurence Boudet, Jean-Philippe Poli, Alicia Bel, François Castillon, Frédéric Gaigne and Olivier Casula.

How Potential BLFs Can Help to Decide under Incomplete Knowledge.
Florence Dupin De Saint-Cyr and Guillaume Romain.

Sequential decision making under uncertainty: ordinal uninorms vs. the Hurwicz criterion.
Hélène Fargier and Romain Guillaume.

A proposal to measure human group behaviour stability.
Teresa González-Arteaga, José Manuel Cascón and Rocío De Andrés.

Tu. 11:30-13:30 Session 12.B.4: SS.21. New trends in data aggregation
Chairpersons: Bernard De Baets and Raúl Pérez Fernández

The median procedure as an example of penalty-based aggregation of binary relations.
Raúl Pérez-Fernández and Bernard De Baets.

Least median of squares (LMS) and least trimmed squares (LTS) fitting for the weighted arithmetic mean.
Gleb Beliakov, Marek Gagolewski and Simon James.

Combining absolute and relative information in studies on food quality.
Marc Sader, Raúl Pérez-Fernández and Bernard De Baets.

Robust On-Line Streaming Clustering.
Omar Ibrahim, Yizhuo Du and James Keller.

Twofold binary image consensus for medical imaging meta-analysis.
Carlos López-Molina, Javier Sánchez Ruiz de Gordoa, M. Victoria Zelaya Huerta and Bernard De Baets.

Tu. 11:30-13:30 Session 12.B.4: SS.21. Fuzzy Logic and Artificial Intelligence Problems (I)
Parallel Workshop. Chairpersons: Daniel Sánchez
http://decsai.ugr.es/pi/lidvis/IPMU2018Session.html

Tu. 13:30-15:00 Lunch

Tu. 15:00-16:00 Plenary talk: Consensus in Group Decision Making and Social Networks
Speaker: Prof. Enrique Herrera-Viedma
Chairperson: José Luis Verdegay

Tu. 16:00-16:20 Coffee break

Tu. 16:20-18:00 Session 12.C.1: SS.23. Pre-aggregation functions and generalized forms of monotonicity
Chairperson: Humberto Bustince

Penalty-based functions defined by pre-aggregation functions
Graçaliz Dimuro, Radko Mesiar, Humberto Bustince, Benjamín Bedregal, José Antonio Sanz Delgado and Giancarlo Lucca

Strengthened ordered directional and other generalizations of monotonicity for aggregation functions.
Mikel Sesma-Sara, Laura De Miguel, Julio Lafuente, Edurne Barrenechea, Radko Mesiar and Humberto Bustince.

A study of different families of fusion functions for combining classifiers in the One-vs-One strategy.
Mikel Uriz, Daniel Paternain, Aranzazu Jurio, Humberto Bustince and Mikel Galar.

Aggregation functions based on deviations.
Marián Decký, Radko Mesiar and Andrea Stupňanová.

Image feature extraction using OD-monotone functions.
Cedric Marco-Detchart, Carlos López-Molina, Javier Fernández, Miguel Pagola and Humberto Bustince.

Tu. 16:20-18:00 Session 12.C.2: SS.9. Fuzzy Logic and Artificial Intelligence Problems (II)
Chairperson: Juan Luis Castro

Interval Type-2 Intuitionistic Fuzzy Logic Systems - A Comparative Evaluation.
Imo Eyoh, Robert John and Geert De Maere.

Merging information using Uncertain Gates: An application to Educational Indicators.
Guillaume Petiot.

New negations on the type-2 membership degrees.
Carmen Torres-Blanc, Susana Cubillo and Pablo Hernández-Varela.

Combining Weighted Description Logic with Fuzzy Logic for Decision Making.
Nadine Mueller, Klemens Schnattinger and Heike Walterscheid.

On Hash Bipolar Division: An Enhanced Processing of Novel and Conventional Forms of Bipolar Division.
Noussaiba Benadjimi, Walid-Khaled Hidouci and Allel Hadjali.

Tu. 16:20-18:00 Session 12.C.3: SS.5. Decision Making modeling and applications III
Chairperson: Teresa González-Arteaga

Applying Suitability Distributions in a Geological Context.
Robin De Mol and Guy De Tré.

Identifying Criteria Most Influencing Strategy Performance: Application to Humanitarian Logistical Strategy Planning.
Cécile L'Heritier, Abdelhak Imoussaten, Sébastien Harispe, Gilles Dusserre, Benoît Roig.

The use of fuzzy linguistic information and Fuzzy Delphi method to validate by consensus a questionnaire in a Blended-Learning environment.
Jeovani Morales, Rosana Montes, Noe Zermeño, Jerónimo Durán and Francisco Herrera

On the Interaction between Feature Selection and Parameter Determination in Fuzzy Modelling.
Peipei Chen, Caro Fuchs, Anna Wilbik, Tak-Ming Chan, Saskia van Loon, Arjen-Kars Boer, Xudong Lu, Volkher Scharnhors and Uzay Kaymak.

FS4RVDD: A Feature Selection Algorithm for Random Variables with Discrete Distribution.
Fiorella Cravero, Santiago Schustik, María Jimena Martínez, Mónica Fátima Díaz and Ignacio Ponzoni.

Tu. 18:00-20:00   EUSFLAT Meeting

WEDNESDAY 13th

W. 9:00-10:00 **Plenary talk: Uncertainty quantification of many-valued events: betting methods, geometry and reasoning**
Speaker: Prof. Lluis Godo
Chairperson: Prof. Manuel Ojeda-Aciego

W. 10:00-11:00 **Session 13.A.1: General Track**
Chairperson: Jesús Medina

Clustering of Propositions Equipped with Uncertainty.
Marek Reformat, Jesse Xi Chen and Ronald R. Yager.

Co-words Analysis of the Last Ten Years of the International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems.
Manuel Jesús Cobo Martin, Wanru Wang, Sigifredo Laengle, José M. Merigó, Dejian Yu and Enrique Herrera-Viedma.

Robust Lookup Table Controller Based on Piecewise Multi-Linear Model for Nonlinear Systems with Parametric Uncertainty.
Tadanari Taniguchi and Michio Sugeno.

W. 10:00-11:00 Session 13.A.2: General Track
Chairperson: Eloísa Ramírez-Poussa

A New Approach to Hellwig's Method of Data Reduction for Atanassov's Intuitionistic Fuzzy Sets.
Eulalia Szmidt and Janusz Kacprzyk.

Towards a Semantic Gas Source Localization under Uncertainty.
Javier Monroy, José-Raúl Ruiz-Sarmiento, Francisco-Ángel Moreno, Cipriano Galindo and Javier González-Jiménez.

A Novel Uncertainty Quantification Method for Efficient Global Optimization.
Bas van Stein, Hao Wang, Wojtek Kowalczyk and Thomas Bäck.

W. 10:00-11:00 Session 13.A.3: General Track
Chairperson: María Eugenia Cornejo

Topological MI-groups: Initial Study.
Michal Holčapek and Nicole Škorupová.

On Cantor's Theorem for Fuzzy Power Sets.
Michal Holčapek.

The Relationship Between Graphical Representations of Regular Vine Copulas and Polytrees.
Diana Carrera, Roberto Santana and José A. Lozano.

W. 10:00-11:00 Session 13.A.4: SS.22. Optimization models for modern analytics I
Chairperson: José Luis Verdegay

Implementing data envelopment analysis in an uncertain perception-based online evaluation environment.
Debora Di Caprio and Francisco Javier Santos Arteaga.

Constraint Shortest Path Problem in a Network with Intuitionistic Fuzzy Arc Weights.
Homayun Motameni and Ali Ebrahimnejad.

A comparison between NARX Neural Networks and Symbolic Regression: An application for energy consumption forecasting.
Ramón Rueda Delgado, Luis G. Baca Ruíz, Manuel Pegalajar Cuéllar, Miguel Delgado Calvo-Flores and María Del Carmen Pegalajar Jiménez.

W. 11:00-11:30 Coffee Break

W. 11:30-13:40 Session 13.B.1: SS.1. Advances on Explainable Artificial Intelligence
Chairpersons: José M. Alonso and Luis Magdalena.

A Bibliometric Analysis of the Explainable Artificial Intelligence Research Field.
Jose M. Alonso, Ciro Castiello and Corrado Mencar.

Do Hierarchical Fuzzy Systems really improve interpretability?
Luis Magdalena.

Human Players versus Computer Games Bots: A Turing test based on Linguistic Description of Complex Phenomena and Restricted Equivalence Functions.
Clemente Rubio-Manzano, Tomás Lermanda-Senoceain, Christian Vidal-Castro, Alejandra Segura-Navarrete and Claudia Martínez-Araneda.

Reinterpreting interpretability for fuzzy linguistic descriptions of data.
Alejandro Ramos and Martín Pereira-Fariña.

Tell Me Why: Computational Explanation of Conceptual Similarity Judgments.
Davide Colla, Enrico Mensa, Daniele P. Radicioni and Antonio Lieto.

Multi-operator Decision Trees for Explainable Time-Series Classification.
Vera Shalaeva, Sami Alkhoury, Julien Marinescu, Cécile Amblard and Gilles Bisson.

Comparison-based Inverse Classification for Interpretability in Machine Learning.
Thibault Laugel, Marie-Jeanne Lesot, Christophe Marsala, Xavier Renard and Marcin Detyniecki.

W. 11:30-13:40 **Session 13.B.2: SS.17.Mathematical Fuzzy Logic**
Chairperson: Lluis Godo

Mapping Utilities to Transitive Preferences.
Thomas A. Runkler.

On the structure of group-like FLe-chains.
Sándor Jenei.

First steps towards harnessing partial functions in fuzzy type theory.
Vilém Novák.

Logics for strict coherence and Carnap-regular probability functions.
Tommaso Flaminio.

Connecting systems of mathematical fuzzy logic with fuzzy concept lattices.
Pietro Codara, Francesc Esteva, Lluís Godo and Diego Valota.

Characterizing fuzzy y-models in multi-adjoint normal logic programming.
M. Eugenia Cornejo, David Lobo and Jesús Medina.

W. 11:30-13:40 **Session 13.B.3: SS.13. Imprecise Probabilities: foundations and applications**
Chairperson: Enrique Miranda

Natural extension of choice functions.
Arthur Van Camp, Enrique Miranda and Gert de Cooman.

Approximations of coherent lower probabilities by 2-monotone capacities.
Ignacio Montes, Enrique Miranda and Paolo Vicig.

Web Apps & Imprecise Probabilitites.
Jorge Castro, Joaquim Gabarro and Maria Serna.

Conditional submodular coherent risk measures.
Giulianella Coletti, Davide Petturiti and Barbara Vantaggi.

Virtual Subconcept Drift Detection in Discrete Data Using Probabilistic Graphical Models.
Rafael Cabañas de Paz, Andrés Cano, Manuel Gómez-Olmedo, Andrés R. Masegosa and Serafín Moral.

W. 11:30-13:40 Session 13.B.4: SS.22. Optimization models for modern analytics II
        Chairperson: Ali Ebrahimnejad

MOLP Approach for Solving Transportation Problems with Intuitionistic Fuzzy Costs.
Ali Ebrahimnejad and José Luis Verdegay.

Context-based Decision and Optimization: the Case of the Maximal Coverage Location Problem.
María Teresa Lamata, David Pelta, Alejandro Rosete and José Luis Verdegay.

Reliability improvement of Odour Detection Thresholds bibliographic data.
Pascale Montreer, Stefan Janaqi, Stéphane Cariou, Mathilde Chaignaud, Isabelle Betremieux, Philippe Ricoux, Frédéric Picard, Sabine Sirol, Budagwa Assumani and Jean-Louis Fanlo.

A Decision Support System based on a Hybrid Genetic Local Search heuristic for solving the Dynamic Vehicle Routing Problem: Tunisian Case.
Ines Sbai, Olfa Limem, Saoussen Krichen.

W. 13:40-15:00   Lunch

W. 15:00-16:30 ---

W. 16:30-19:00   Social event

W. 20:00   Gala dinner

THURSDAY 14th

T. 10:00-11:00   **Plenary talk: Multisource Geo Big Data for Earth Observation: Challenges Offered by Fuzzy Approaches**
Speaker: Prof. Gloria Bordogna
Chairperson: Bernadette Bouchon-Meunier

T. 11:00-11:30   Coffee Break

T. 11:30-13:30 **Session 14.B.1: SS.8. Fuzzy Implication Functions**
Chairpersons: Sebastia Massanet and Michal Baczynski

Fuzzy Boundary Weak Implications.
Hua-Wen Liu and Michał Baczyński.

On linear and quadratic constructions of fuzzy implication functions.
Sebastia Massanet, Juan Vicente Riera and Joan Torrens.

On the characterization of a family of generalized Yager's implications.
Raquel Fernandez-Peralta and Sebastia Massanet.

Generalized Modus Ponens for (U,N)-implications.
Margarita Mas, Daniel Ruiz-Aguilera and Joan Torrens.

Dependencies between some types of fuzzy equivalences.
Urszula Bentkowska and Anna Król.

Selected Properties of Generalized Hypothetical Syllogism Including the Case of R-implications
Michał Baczyński and Katarzyna Miś.

T. 11:30-13:30 **Session 14.B.2: SS.10. Fuzzy Mathematical Analysis and Applications.**
Chairperson: Manuel Ojeda-Aciego

Artificial neural networks and fuzzy logic for specifying the color of an image using munsell soil-color charts.
María *Del Carmen Pegalajar, Manuel Sánchez-Marañón, Luis Gonzaga Baca-Ruiz, Luis Mansilla and Miguel Delgado Calvo-Flores.*

Steinhaus transforms of fuzzy string distances in computational linguistics.
Anca Dinu, Liviu P. Dinu, Laura Franzoi and Andrea Sgarro.

Size-based super level measures on discrete space.
Jana Borzová, Lenka Halčinová and Jaroslav Šupina.

Modified Methods of Capital Budgeting under Uncertainties: An Approach Based on Fuzzy Numbers and Interval Arithmetic.
Antonio Carlos de Souza Sampaio Filho, Marley M. B. R. Vellasco and Ricardo Tanscheit.

Solving job-shop scheduling problems with fuzzy processing times and fuzzy due dates.
Camilo Alejandro Bustos-Tellez, Jhoan Sebastian Tenjo-Garcia and Juan Carlos Figueroa-García.

T. 11:30-13:30 Session 14.B.3: SS.3. Belief Function Theory and its Applications
Chairperson: Didier Coquin

Measuring features strength in probabilistic classification.
Rosario Delgado and Xavier-Andoni Tibau.

DETD: Dynamic policy for case base maintenance based on EK-NNclus algorithm and case Types Detection.
Safa Ben Ayed, Zied Elouedi and Eric Lefèvre

Ensemble Enhanced Evidential k-NN classifier through rough set reducts.
Asma Trabelsi, Zied Elouedi and Eric Lefèvre.

Towards a Hybrid User and Item-based Collaborative Filtering under the Belief Function Theory.
Raoua Abdelkhalek, Imen Boukhris and Zied Elouedi.

Evidential Top-k Queries Implementation: Algorithms and Experiments.
Fatma Ezzahra Bousnina, Mouna Chebbah, Mohamed Anis Bach Tobji, Allel Hadjali and Boutheina Ben Yaghlane.

Independence of Sources in Social Networks.
Manel Chehibi, Mouna Chebbah and Arnaud Martin.

T. 11:30-13:30 Session 14.B.4: SS.30. Uncertainty in Video/Image Processing (UVIP)
Chairperson: Enrique Domínguez

Foreground detection enhancement using Pearson correlation filtering.
Rafael M. Luque-Baena, Miguel A. Molina-Cabello, Ezequiel López-Rubio and Enrique Domínguez.

Identifying pixels classified uncertainties ckMeansImage algorithm.
Rogério R. De Vargas, Ricardo Freddo, Cristiano Galafassi, Sidnei Gass, Alexandre Russini and Benjamín Bedregal.

Automatic Detection of Thistle-Weeds in Cereal Crops from Aerial RGB Images
Camilo Franco, Carely Guada, J. Tinguaro Rodríguez, Jon Nielsen, Jesper Rasmussen, Daniel Gómez and Javier Montero.

Navigating the meaning and uncertainty hierarchy within image scenes and the words that describe them.
Lauren Barghout.

T. 13:30-15:00   Lunch

T. 15:00-16:00 Round table: ICTs and CEI·MAR

T. 16:00-16:30 Coffee Break

**T. 16:30-18:00 Session 14.C.1: SS.6. Discrete models and Computational Intelligence.
         Chairperson: László Kóczy**

T-overlap Functions: a generalization of bivariate overlap functions by t-norms.
Hugo Zapata, Graçaliz Dimuro, Javier Fernández and Humberto Bustince.

On the Existence and Uniqueness of Fixed Points of Fuzzy Cognitive Maps.
István Harmati, Miklós Hatwágner and László T. Kóczy.

Searching Method of Fuzzy Internally Stable Set as Fuzzy Temporal Graph Invariant.
Alexander Bozhenyuk, Stanislav Belyakov, Margarita Knyazeva and Igor Rozenberg.

Prioritisation of Nielsen's Usability Heuristics for User Interface Design Using Fuzzy Cognitive Maps.
Rita Amro, Saransh Dhama, Muhanna Muhanna and László T. Kóczy.

Discrete Bacterial Memetic Evolutionary Algorithm for the Time Dependent Traveling Salesman Problem.
Boldizsár Tüű-Szabó, Péter Földesi and László T. Kóczy.

**T. 16:30-18:00 Session 14.C.2: SS.14. Logical methods in mining knowledge from big data
         Chairperson: Vilém Novák**

Fuzzy association rules on data with undefined values.
Petra Murinová, Viktor Pavliska and Michal Burda.

Subproduct and grouping features in fuzzy relational compositions.
Nhung Cao, Martin Štěpnička, Michal Burda and Aleš Dolný.

Compositions of partial fuzzy relations.
Nhung Cao and Martin Štěpnička.

Towards a hierarchical extension of contextual bipolar queries.
Janusz Kacprzyk and Sławomir Zadrożny.

Quantification over Undefined Truth Values.
Martina Daňková.

T. 16:30-18:00 Session 14.C.3: General track
Chairperson: David Pelta

Predicting First-Episode Psychosis Associated with Cannabis Use with Artificial Neural
Networks and Deep Learning.
*Daniel Stamate, Wajdi Alghamdi, Daniel Stahl, Ida Pu, Fionn Murtagh, Danielle
Belgrave, Robin Murray and Marta di Forti.*

Opinion mining in social networks for Algerian dialect.
Mehdi Bettiche, Moncef Zakaria Mouffok and Chahnez Zakaria.

Representing Hypoexponential Distributions in Continuous Time Bayesian Networks.
Manxia Liu, Fabio Stella, Arjen Hommersom and Peter Lucas.

FRIDAY 15th

F. 9:00-10:00   Plenary talk: Biological Apps: Rapidly Converging Technologies for Living
Information Processing
Speaker: Prof. Natalio Krasnogor
Chairperson: Prof. Irina Perfilieva

F. 10:00-11:00 Session 15.A.1: SS.12. Fuzzy transforms: theory and applications to data
analysis and processing I
Chairperson: Irina Perfilieva

Axiomatic of Inverse Lattice-valued F-transform.
Jiří Močkoř.

Why Triangular Membership Functions Are Often Efficient in F-Transform Applications:
Relation to Probabilistic and Interval Uncertainty and Haar Wavelets.
Olga Kosheleva and Vladik Kreinovich.

Enhanced F-transform exemplar based image inpainting.
Pavel Vlašánek.

F. 10:00-11:00 **Session 15.A.2: SS.26. Soft Computing for Decision Making in Uncertainty I**
Chairperson: Yuriy P. Kondratenko

Missing data imputation by LOLIMOT and FSVM/FSVR algorithms with a novel approach: A Comparative Study.
Fatemeh Fazlikhani, Pegah Motakefi and Mir Mohsen Pedram.

Two Modifications of the Automatic Rule Base Synthesis for Fuzzy Control and Decision Making Systems.
Yuriy Kondratenko, Oleksiy Kozlov and Oleksiy Korobko.

Decision making under incompleteness based on soft set theory.
José Carlos R. Alcantud and Gustavo Santos-García.

F. 10:00-11:00 **Session 15.A.3: General track**
Chairperson: David A. Pelta

A Proposal for Adaptive Maps.
Marina Torres, David A. Pelta and José Luis Verdegay.

Using inductive rule learning techniques to learn planning domains.
José Á. Segura-Muros, Raúl Pérez and Juan Fernández-Olivares.

Divergence Measures and Approximate Algorithms for Valuation Based Systems.
Serafín Moral.

F. 10:00-11:00 **Session 15.A.4: SS.20. Metaheuristics and Machine Learning I**
Chairperson: Patricia Ruiz

Evidential Bagging: Combining Heterogeneous Classifiers in the Belief Functions Framework.
Nicolas Sutton-Charani, Abdelhak Imoussaten, Sébastien Harispe and Jacky Montmain.

Dealing with Epistemic Uncertainty in Multi-objective Optimization: A Survey.
Oumayma Bahri and El-Ghazali Talbi.

Analyzing the Influence of LLVM Code Optimization Passes on Software Performance.
Juan Carlos de la Torre, Patricia Ruiz, Bernabé Dorronsoro and Pedro L. Galindo.

F. 11:00-11:30 Coffee Break

F. 11:30-13:30 **Session 15.B.1: SS.12. Fuzzy transforms: theory and applications to data analysis and image processing II**
Chairperson: Jiří Močkoř

A Novel Approach to The Discrete Fuzzy Transform of Higher Degree.
Linh Nguyen and Michal Holčapek.

Lattice-Valued F-Transforms as Interior Operators of L-fuzzy Pretopological Spaces.
Irina Perfilieva, S. P. Tiwari and Anand P. Singh.

Modified F-transform Based on B-splines.
Martins Kokainis and Svetlana Asmuss.

Collocation method for linear BVPs via B-spline based fuzzy transform.
Martins Kokainis and Svetlana Asmuss.

F. 11:30-13:30   Session 15.B.2: SS.26. Soft Computing for Decision Making in Uncertainty II
Chairperson: Yuriy P. Kondratenko

Fuzzy relational compositions can be useful for customers credit scoring in financial industry.
Soheyla Mirshahi and Nhung Cao.

Intelligent Decision Support System for Selection of the Rational Model of University-Industry Cooperation.
Yuriy Kondratenko, Galyna Kondratenko and Ievgen Sidenko.

Strategy to Managing Mixed Datasets with Missing Items.
Inna Skarga-Bandurova, Tetiana Biloborodova and Yuriy Dyachenko.

Predicting Opponent's Moves for Improving Hearthstone AI.
Alexander Dockhorn, Max Frick, Ünal Akkaya and Rudolf Kruse.

A New Generic Framework for Argumentation-based Negotiation using Case-Based Reasoning.
Rihab Bouslama, Raouia Ayachi and Nahla Ben Amor.

Personality determination of an individual through neural networks.
Rubén Sánchez, Manuel Capel, Celina Jiménez, Gonzalo Rodríguez-Fraile and María del Carmen Pegalajar.

F. 11:30-13:30   Session 15.B.3: SS.19. Measures of comparison and entropies for fuzzy sets and their extensions
Chairperson: Susana Montes

On Dissimilarity Measures at the Fuzzy Partition Level.
Grégory *Smits, Olivier Pivert and Toan Ngoc Duong.*

Fuzzy Extensions of Conceptual Structures of Comparison.
Didier Dubois, Henri Prade and Agnès Rico.

Monotonicity of a profile of rankings with ties.
Raúl Pérez-Fernández, Irene Díaz, Susana Montes and Bernard De Baets.

Consistency properties for fuzzy choice functions: an analysis with the Lukasiewicz t-norm.
Susana Díaz, José Carlos R. Alcantud and Susana Montes.

Entropy and Monotonicity.
Bernadette Bouchon-Meunier and Christophe Marsala.

Comparison between ordered ordinary fuzzy multiset.
Ángel Riesgo, Pedro Alonso, Irene Díaz, Vladimír Janiš, Vladimír Kobza and Susana Montes.

F. 11:30-13:30   Session 15.B.4: SS.20. Metaheuristics and Machine Learning II
                   Chairperson: Bernabé Dorronsoro

Finding the most Influential Parameters of Coalitions in PSO-CO Algorithm.
Patricia Ruiz, Bernabé Dorronsoro, Juan Carlos de la Torre and Juan Carlos Burguillo.

A comparative analysis of accurate and robust bi-objective scheduling heuristics for datacenters.
Sergio Nesmachnow and Bernabé Dorronsoro.

Applying Genetic Algorithms for the Improvement of an Autonomous Fuzzy Driver for Simulated Car Racing.
Mohammed Salem, Antonio Miguel Mora, Juan J. Merelo and Pablo García-Sánchez.

A self-organizing ensemble of deep neural networks for the classification of data from complex processes.
Niclas Ståhl, Göran Falkman, Gunnar Mathiason and Alexander Karlsson.

Fuzzy rule learning for material classification from imprecise data.
Arnaud Grivet Sébert and Jean-Philippe Poli.

Credal C4.5 with refinement of parameters.
Carlos Mantas, Joaquín Abellán, Javier Castellano, José Cano and Serafín Moral-García.

13:30   CLOSING SESSION