

EUSFLAT 2013 Program

Wednesday, September 11, 2013 (Buildings U2/U4, Bicocca Campus)

Registration (08:00--18:00)

Location: Underground Floor, Building U4, Piazza della Scienza

Conference Opening (09:00--09:30)

Welcome: Gabriella Pasi and Javier Montero

Location: Room U2-01, Ground Floor, Building U2

Keynote Talk (09:30-10:30)

Chair: Gabriella Pasi

Location: Room U2-01, Ground Floor, Building U2

Title: *Interpretability, a Silver Lining to a Fuzzy Cloud*

Speaker: Bernadette Bouchon-Meunier (Université Paris 6, LIP6, France)

Coffee Break (10:30-10:50)

Location: Underground Floor, Building U4, Piazza della Scienza

Special Session 3: Fuzzy Implication Functions – part I (Room U2-1)

Session Chair: Michal Baczynski

Session Time: 10:50-12:30

- ♦ Mirko Navara, *Fuzzy implications satisfying convexity relations*
- ♦ Sebastià Massanet, Gaspar Mayor and Joan Torrens, *Constructing non-functionally expressible fuzzy implications*
- ♦ Juan Vicente Riera and Joan Torrens, *Coimplications in the set of discrete fuzzy numbers*
- ♦ Davide Martinetti, Susana Díaz, Susana Montes and Bernard De Baets, *Bridging Probabilistic and Fuzzy Approaches to Choice Under Uncertainty*
- ♦ Aguiló Isabel, Suñer Jaume and Torrens Joan, *Constructing implication functions from fuzzy negations*

Special Session 11: Soft Computing in Database Management and Information Retrieval – part I (Room U4-5)

Session Chair: Guy De Trè

Session Time: 10:50-12:10

- ♦ Jörg Verstraete, *Distance calculation between Level-2 fuzzy regions*
- ♦ Samia Boulkrinat, Allel Hadjali and Aicha Mokhtari, *Towards recommender systems based on a fuzzy preference aggregation*
- ♦ Oliver Jundt and Maurice Van Keulen, *Sample-based XPath Ranking for Web Information Extraction*
- ♦ Giovanna Castellano, Anna Maria Fanelli and Maria Alessandra Torsello, *Shape Retrieval by Partially Supervised Fuzzy Clustering*

Special Session 2: Decision Analysis and Support in Risk Management with Soft Computing (Room U4-6)

Session Chair: Jie Lu

Session Time: 10:50-12:30

- ♦ Alexander Lepskiy, *About Relation between the Measure of Conflict and Decreasing of Ignorance in Theory of Evidence*
- ♦ Zhen Zhang, Guangquan Zhang, Jie Lu and Chonghui Guo, *A fuzzy tri-level decision making algorithm and its application in supply chain*
- ♦ Luca Anzilli, Gisella Facchinetti and Giovanni Mastroleo, *Evaluation and interval approximation of fuzzy quantities*
- ♦ Leandro Maciel, Fernando Gomide and Rosângela Ballini, *Forecasting Exchange Rates with Fuzzy Granular Evolving Modeling for Trading Strategies*
- ♦ J. Tinguaro Rodríguez, Begoña Vitoriano and Javier Montero, *Fuzzy Dissimilarity-Based Classification for Disaster Initial Assessment*

Lunch (12:30-14:00)

Special Session 7: Learning from Static and Dynamic Data with Fuzzy Techniques (Room U2-1)

Session Chair: Edwin Lughofer

Session Time: 14:00-15:20

- ♦ Carlos Cernuda, Edwin Lughofer, Peter Hintenaus, Wolfgang Märzinger, Thomas Reischer and Wolfram Summerer, *Ensembled Self-Adaptive Fuzzy Calibration Models for On-line Cloud Point Prediction*
- ♦ José Antonio Sanz Delgado, Carlos Lopez-Molina, Juan Cerrón, Radko Mesiar and Humberto Bustince, *A new fuzzy reasoning method based on the use of the Choquet integral*
- ♦ Messaoud Ramdani and Khaled Mendaci, *Nonlinear Statistical Process Monitoring based on Competitive Principal Component Analysis*
- ♦ Ali Fallah Tehrani and Eyke Huellermeier, *Ordinal Choquistic Regression*

Special Session 11: Soft Computing in Database Management and Information Retrieval – part II (Room U4-5)

Session Chair: Antoon Bronselear

Session Time: 14:00-15:20

- ♦ Paolo Arcaini, Gloria Bordogna and Simone Sterlacchini, *Flexible Querying of Volunteered Geographic Information for Risk Management*
- ♦ Antoon Bronselear and Guy De Trè, *Weak Preservation of Multi-Valued Fusion*
- ♦ Christophe Billiet, Jose Enrique Pons, Olga Pons and Guy De Trè, *A Comparison of Approaches to Model Uncertainty in Time Intervals*
- ♦ Joachim Nielandt, Antoon Bronselear and Guy De Trè, *Efficient GCD functions in SQL*

Session Fuzzy Probabilities (U4-6)

Session Chair: Giulianella Coletti

Session Time: 14:00-15:20

- ♦ Martin Papco, *Fuzzification of probabilistic objects*
- ♦ Gilles Mauris, *Possibility transformation of the sum of two symmetric unimodal independent/comonotone random variables*
- ♦ Giulianella Coletti, Davide Petturiti and Barbara Vantaggi, *Probabilistic Fuzzy Reasoning in a Coherent Setting*
- ♦ Pablo Villacorta, Jose Luis Verdegay and David Pelta, *Towards fuzzy linguistic Markov chains*

Coffee Break (15:20-15:50)

Location: Underground Floor, Building U4, Piazza della Scienza

Special Session 3: Fuzzy Implication Functions – part II (Room U2-1)

Session Chair: Sebastià Massanet

Session Time: 15:50-17:10

- ♦ Tomasa Calvo, Javier Martín and Gaspar Mayor, *Aggregation of implication functions*
- ♦ Michal Baczyński, *Solutions of the distributivity equation $I(T(x,y),z) = S(I(x,z),I(y,z))$ for some t -representable t -norms and t -conorms*
- ♦ Sebastià Massanet and Joan Torrens, *An extension of Yager's implications*
- ♦ Anna Król, *Generating of fuzzy implications*

Session Fuzzy Numbers (Room U4-5)

Session Chair: Francesc Esteva

Session Time: 15:50-16:50

- ♦ Arthur Seibel and Josef Schlattmann, *An analytical approach to evaluating monotonic functions of fuzzy numbers*
- ♦ Adrian Ban, Lucian Coroianu and Przemyslaw Grzegorzewski, *A fixed-shape fuzzy median of a fuzzy sample*
- ♦ Michal Holcapek, Michaela Wrublova and Martin Stepnicka, *On Isomorphism Theorems for MI-groups*

Session Fuzzy Inference Systems (Room U4-6)

Session Chair: José Luis Verdegay

Session Time: 15:50-17:30

- ◆ Ayman Mansour, *Fuzzy Rule-Based Approach for Detecting Adverse Drug Reaction Signal Pairs*
- ◆ Lenka Stepnickova, Martin Stepnicka and Antonin Dvorak, *New results on redundancies of fuzzy/linguistic IF-THEN rules*
- ◆ Lenka Štěpničková, Martin Stepnicka and David Sikora, *Fuzzy rule-based ensemble with use linguistic associations mining for time series prediction*
- ◆ Phuc-Nguyen Vo and Marcin Detyniecki. *Smooth Monotonicity in Fuzzy Inference System based on Gradual Generalized Modus Ponens*
- ◆ Irina Perfilieva, *At-least At-most Modifications in a Space with Fuzzy Preorder*

Session Information Summarization (Room U2-1)

Session Chair: Eulalia Szmidt

Session Time: 17:10-17:50

- ◆ Antoon Bronselaer and Gabriella Pasi, *An approach to graph-based analysis of textual documents*
- ◆ Amal Oudni, Marie Jeanne Lesot and Maria Rifqi, *Characterisation of gradual itemsets based on mathematical morphology tools*

Session Uncertainty Representation (Room U4-5)

Session Chair: Lluís Godo

Session Time: 16:50-17:50

- ◆ Jamal Atif, Isabelle Bloch, Felix Distel and Hudelot Celine, *A fuzzy extension of explanatory relations based on mathematical morphology*
- ◆ Davide Ciucci and Didier Dubois, *From paraconsistent three-valued logics to multiple-source epistemic logic*
- ◆ Salem Benferhat, Faiza Khellaf and Ismahane Zeddigha, *A possibilistic graphical model for handling decision problems under uncertainty*

Welcome Cocktail (18:30-19:45)

Location: Underground Floor, Building U4, Piazza della Scienza

Thursday, September 12, 2013 (Buildings U2/U4, Bicocca Campus)

Keynote Talk (09:00-10:00)

Chair: Didier Dubois

Location: Room U2-01, Ground Floor, Building U2

Title: *On generalizing the Nullstellensatz and McNaughton's Theorem for MV-Algebras*

Speaker: Antonio di Nola (Università di Salerno, Italy)

Coffee Break (10:00-10:30)

Location: Underground Floor, Building U4, Piazza della Scienza

Special Session 8: Mathematical Fuzzy Logic – part I (Room U2-1)

Session Chair: Brunella Gerla

Session Time: 10:30-11:30

- ♦ Thomas Vetterlein, *Tomonoid extensions: the key for the construction of t-norms*
- ♦ Rodolfo Ertola, Francesc Esteve, Tommaso Flaminio, Lluís Godó and Carles Noguera, *Exploring Paraconsistency in Degree-Preserving Fuzzy Logics*
- ♦ Petra Murinová and Vilém Novák, *Analysis of generalized square of opposition*

Session Image Processing (Room U4-5)

Session Chair: Marcin Detyniecki

Session Time: 10:30-11:30

- ♦ Aranzazu Jurio, Miguel Pagola, Daniel Paternain, Nicolas Madrid and Humberto Bustince, *Convex combination of grouping functions for image thresholding. Selection of weighting vectors*
- ♦ Vasile Patrascu, *New Framework of HSL System Based Color Clustering Algorithm*
- ♦ Daniel Paternain, Mikel Galar, Aranzazu Jurio and Edurne Barrenechea, *A new algorithm for color image comparison based on similarity measures*

Session Fuzzy Preferences and Decision Making (Room U4-6)

Session Chair: Bernard De Baets

Session Time: 10:30-12:10

- ♦ Bénédicte Goujon and Christophe Labreuche, *Holistic Preference Learning with the Choquet Integral*
- ♦ Dana Hliněná, Martin Kalina and Pavol Král', *Fuzzy preference modelling and some consequences for fuzzy implications and quasi-copulas*
- ♦ Gulcin Buyukozkan and Sezin Güleriyüz, *A new integrated group decision making framework with linguistic interval fuzzy preference relations*
- ♦ Christophe Labreuche and Michel Grabisch, *Use of the GAI model in multi-criteria decision making: inconsistency handling, interpretation*
- ♦ Ana Poledica, Pavle Milosevic, Ivana Dragovic, Dragan Radojevic and Bratislav Petrovic, *A Consensus Model in Group Decision Making Based on Interpolative Boolean Algebra*

Special Session 4: Fuzzy Sets and Fuzzy Logic and e-Learning (Room U4-7)

Session Chair: Mario Fedrizzi

Session Time: 10:30-12:30

- ♦ Fabio Aurelio D'Asaro, Valerio Perticone and Marco Elio Tabacchi, *A fuzzy methodology to alleviate information overload in eLearning*
- ♦ Pasi Luukka and Mikael Collan, *Using a Linguistic Scorecard for Peer-Assessment Through an On-Line System*
- ♦ Rudolf Seising and Marco Elio Tabacchi, *The Webbed Emergence of Fuzzy Sets and Computer Science Education from Electrical Engineering*
- ♦ Mario Fedrizzi and Andrea Molinari, *A Multi-Expert Fuzzy TOPSIS-based Model for the Evaluation of e-Learning Paths*
- ♦ Marek Reformat and Patricia Boechler, *Fuzziness and Semantic Web Technologies in Personalized eLearning*
- ♦ Carlos Oliveira, Marcos Cintra and Francisco Mendes Neto, *Learning Risk Management in Software Projects with a Serious Game Based on Intelligent Agents and Fuzzy Systems*

Special Session 9: Representing and Managing Vagueness: Different Scenarios, Different Tools – Part I (Room U2-1)

Session Chair: Davide Ciucci

Session Time: 11:30-12:30

- ♦ Jesús Medina-Moreno, Maria Eugenia Cornejo and Eloisa Ramírez, Irreducible elements in multi-adjoint concept lattices
- ♦ Juan Carlos Díaz, J. Bosco García, Jesús Medina-Moreno and Rafael Rodríguez, Building multi-adjoint concept lattices
- ♦ Juan Carlos Díaz, Jesús Medina-Moreno and Manuel Ojeda-Aciego, On minimal requirement to obtain fuzzy concept-forming

Session Aggregation Operators – part I (Room U4/5)

Session Chair: Radko Mesiar

Session Time: 11:30-12:30

- ♦ Anna Kolesárová and Radko Mesiar, *On power stable quasi-copulas*
- ♦ Zdenko Takáč, *Type-2 aggregation operators*
- ♦ Daniel Ruiz-Aguilera and Joan Torrens, *Discrete uninorms with smooth underlying operators*

Lunch (12:30-14:00)

Special Session 8: Mathematical Fuzzy Logic – Part II (Room U2-1)

Session Chair: Tommaso Flaminio

Session Time: 14:00-15:20

- ♦ Pablo Hernández, Susana Cubillo and Carmen Torres, *About t-norms on type-2 fuzzy sets*
- ♦ Martin Dyba and Vilém Novák, *First-order EQ-logic*
- ♦ Ramon Jansana and Umberto Rivieccio, *Priestley duality for N4-lattices*
- ♦ Hernán San Martín, *Compatible operations in some subvarieties of weak Heyting algebras*

Session Aggregation Operators – part II (Room U4-5)

Session Chair: Tomasa Calvo

Session Time: 14:00-15:20

- ♦ Urszula Dudziak, *Preservation of t-norm and t-conorm based properties of fuzzy relations during aggregation process*
- ♦ Tarad Jwaid, Bernard De Baets, Hans De Meyer and Radko Mesiar, *Biconic semi-copulas with a given section*
- ♦ Milan Petřík, *On functions that solve Mulholland inequality and on compositions of such functions*
- ♦ Gleb Beliakov, Humberto Bustince, Javier Fernandez, Radko Mesiar and Ana Pradera, *On the use of restricted dissimilarity and dissimilarity-like functions for defining penalty functions*

Special Session 9 Representing and Managing Vagueness: Different Scenarios, Different Tools – Part II (Room U4-6)

Session Chair: Jesús Medina-Moreno

Session Time: 14:00-15:20

- ♦ Cristina Alcalde, Ana Burusco and Ramon Fuentes-Gonzalez, *The incidence relation of an L-Fuzzy Context as structuring element in Fuzzy Mathematical Morphology*
- ♦ Lubomír Antoni, Stanislav Krajčí and Ondrej Křídlo, *On Different Types of Heterogeneous Formal Contexts*
- ♦ Tamás Mihálydeák, *Partial first-order logic relying on optimistic, pessimistic and average partial membership functions*
- ♦ Sarah Greenfield and Francisco Chiclana, *The Structure of the Type-Reduced Set of a Continuous Type-2 Fuzzy Set operators*

Special Session 1: Advances in Bipolarity Applied to Databases and Information Systems (Room U4-7)

Session Chair: Allel Adjali and Ludovic Lietard

Session Time: 14:00-15:20

- ♦ Ludovic Liétard, Olivier Pivert and Daniel Rocacher, *On a Graded Inclusion of Bipolar Fuzzy Relations*
- ♦ Isabelle Bloch and Jamal Atif, *Distance to bipolar information from morphological dilation*

- ♦ Didier Dubois and Henri Prade, *On various forms of bipolarity in flexible querying*
- ♦ Janusz Kacprzyk and Slawomir Zadrozny, *Compound bipolar queries: combining bipolar queries and queries with fuzzy linguistic quantifiers*

Break (15:20-15:40)

EUSFLAT ASSEMBLY

Time: 15:40 – 18:00

Location: Room U2-1

Banquet and Best Papers Award Cerimony (20:00-23:00)

Location: Acquario Civico Milano, <http://www.acquariocivicomilano.eu/cms/>

Friday, September 13, 2013 (Buildings U2/U4, Bicocca Campus)

Keynote Talk (09:00-10:00)

Chair: Javier Montero

Location: Room U2-01, Ground Floor, Building U2

Title: *Image Processing and Classification using extensions of fuzzy sets, First Successes*

Speaker: Humberto Bustince (Public University of Navarra, Spain)

Coffee Break (10:00-10:30)

Location: Underground Floor, Building U4, Piazza della Scienza

Session Topological Spaces (Room U4-5)

Session Chair: Vilem Novak

Session Time: 10:30-11:30

- ◆ Mustafa Demirci, *Applications of Categorical Fixed-basis Fuzzy Topological Spaces to A-valued Spaces*
- ◆ Vildan Cetkin and Halis Aygun, *A Note on Fuzzy Soft Topological Spaces*
- ◆ Alexander Sostak and Ingrida Uljane, *Bornological structures in the context of L-fuzzy sets*

Session Intuitionistic Fuzzy Sets (Room U4-6)

Session Chair: Janusz Kacprzyk

Session Time: 10:30-11:10

- ◆ Glad Deschrijver. Triangular norms which are join-morphisms in 3-dimensional fuzzy set theory
- ◆ Eulalia Szmidt and Janusz Kacprzyk. Geometric similarity measures for the intuitionistic fuzzy sets

Session Fuzzy Applications (Room U2-1)

Session Chair: Martin Stepnicka

Session Time: 10:30-12:30

- ◆ Didier Dubois, Hélène Fargier and Dominique Guyonnet, *Data Reconciliation under Fuzzy Constraints in Material Flow Analysis*
- ◆ Leonid Bershtein, Alexandr Bozhenyuk and Igor Rozenberg, *Optimum Allocation of Centers in Transportation Networks by Means of Fuzzy Graph Bases*
- ◆ Rudolf Felix, *Optimization of Partly Conflicting Goals in Complex Resource Planning*
- ◆ Manuel González-Hidalgo, Sebastià Massanet, Arnau Mir and Daniel Ruiz-Aguilera, *High-density impulse noise removal using fuzzy mathematical morphology*
- ◆ Julija Asmuss and Gunars Lauks, *A fuzzy approach for network bandwidth management*
- ◆ Evangelia Bourgani, Chrysostomos Stylios, Voula Georgopoulos and George Manis, *A study on Fuzzy Cognitive Map structures for Medical Decision Support Systems*

Session Linear Programming (Room U4-5)

Session Chair: Ederne Barrenechea

Session Time: 11:30-12:30

- ◆ Beatrice Lazzarini and Francesco Pistolesi. Efficient energy dispatching in smart microgrids using an integration of fuzzy AHP and TOPSIS assisted by linear programming
- ◆ Pavels Orlovs, Olga Montvida and Svetlana Asmuss. A choice of bilevel linear programming solving parameters: factor aggregation approach
- ◆ Behrouz Kheirfam and José-Luis Verdegay. Optimization and Reoptimization in Fuzzy Linear Programming problems

Special Session 5: Fuzzy Transform and its applications – part I (Room U4-6)

Session Chair: Irina Perfilieva

Session Time: 11:10-12:30

- ◆ Maria Letizia Guerra and Luciano Stefanini, *Expectile Smoothing using F-transform*
- ◆ Jiri Kupka and Iva Tomanova, *Hidden functional dependencies found by the technique of F-transform*

- ◆ Irina Kodorane and Svetlana Asmuss, *On approximation properties of spline based F-transform with respect to fuzzy m-partition*
- ◆ Petra Hodakova and Irina Perfilieva, *F^Λ-transform of Functions of Two Variables*

Lunch (12:30-14:00)

Special Session 10: Soft Computing and the Human Sciences – part I (Room U4-5)

Session Chair: Marco Elio Tabacchi

Session Time: 14:00-15:40

- ◆ Luis Arguelles Mendez, *Introducing Floating Singletons with an example application in clinic spirometry*
- ◆ Rudolf Seising, *Reflections on a Fuzzy Logic of Scientific Discovery and Fuzzy Structures of Scientific Revolutions*
- ◆ Enric Trillas and Claudio Moraga, *Reasons for a careful design of fuzzy sets*
- ◆ Nick Pizzi, *On the Role of Soft Computing in Modelling the Spread of Infectious Diseases*
- ◆ Tatiana Kiseliova, Marina Fandoeva and Anna Sikharulidze, *Investigation of heat waves based on the most typical fuzzy expected values with corresponding trapezoidal membership functions.*

Special Session 5: Fuzzy Transform and its applications – part II (Room U4-6)

Session Chair: Petra Hodakova

Session Time: 14:00-15:20

- ◆ Vilem Novak, Viktor Pavliska, Irina Perfilieva and Martin Stepnicka, *F-transform and Fuzzy Natural logic in Time Series Analysis*
- ◆ Pavel Vlašánek and Irina Perfilieva, *Influence of various types of basic functions on image reconstruction using F-transform*
- ◆ Petr Hurtik and Irina Perfilieva, *Image compression methodology based on fuzzy transform using block similarity*
- ◆ Michal Holcapek, Vilem Novak and Irina Perfilieva, *Analysis of stationary processes using fuzzy transform*

Session Clustering and Classification (Room U2-1)

Session Chair: Oscar Cordon

Session Time: 14:00-15:40

- ◆ Christian Borgelt and Christian Braune, *Prototype Construction for Clustering of Point Processes based on Imprecise Synchrony*
- ◆ Enrique Leyva, Antonio González and Raúl Pérez, *A Genetic Tuned Fuzzy Classifier Based on Prototypes*
- ◆ Krzysztof Trawinski and Arnaud Quirin, *On Applying Random Oracles to Fuzzy Rule-Based Classifier Ensembles for High Complexity Datasets*
- ◆ Marsala Christophe and Davide Petturiti, *Monotone Classification with Decision Trees*
- ◆ Henri Prade and Gilles Richard, *Picking the one that does not fit - A matter of logical proportions*

Coffee Break (15:40-16:00)

Location: Underground Floor, Building U4, Piazza della Scienza

Special Session 10: Soft Computing and the Human Sciences – part II (Room U4-5)

Session Chair: Rudolf Seising

Session Time: 16:00-17:20

- ◆ Clara Barroso, *Context, information's meaning, and perception*
- ◆ Takehiko Nakama, Enrique Muñoz and Enrique Ruspini, *Generalizing Precisiated Natural Language: A Formal Logic as a Precisiation Language*
- ◆ Marco Elio Tabacchi and Settimo Termini, *Theory of Computation, Fuzziness and a physics of the immaterial*
- ◆ Itziar García-Honrado, *Reflections on the teaching of Fuzzy Logic*

Special Session 6: Interpretable Fuzzy Systems (Room U4-6)

Session Chair: Luis Magdalena

Session Time: 16:00-17:20

- ◆ Andri Riid and Mari Sarv, *Determination of regional variants in the versification of Estonian folksongs using an interpretable fuzzy rule-based classifier*
- ◆ Corrado Mencar, Marco Lucarelli, Ciro Castiello and Fanelli Anna Maria, *Design of Strong Fuzzy Partitions from Cuts*

- ◆ Patricia Conde Clemente, Jose M. Alonso and Gracian Trivino, *Interpretable fuzzy system allowing to be framed in a profile photo through linguistic expressions*
- ◆ David P. Pancho, Jose M. Alonso, Jesús Alcalá-Fdez and Luis Magdalena, *Interpretability analysis of fuzzy association rules supported by figrams*

Session Fuzzy Measures (Room U2-1)

Session Chair: Eyke Hüllermeier

Session Time: 16:00-17:00

- ◆ Vicenc Torra, Yasuo Narukawa, Michio Sugeno and Michael Carlson, *Hellinger distance for fuzzy measures*
- ◆ Didier Dubois, Henri Prade and Agnès Rico, *Qualitative integrals and desintegrals as lower and upper possibilistic expectations*
- ◆ Fabio Rindone and Salvatore Greco, *$h - k$ -aggregation functions, measures and integrals*

Conference Closure (17:20-17:40)

Location: Room U2-01, Ground Floor, Building U2