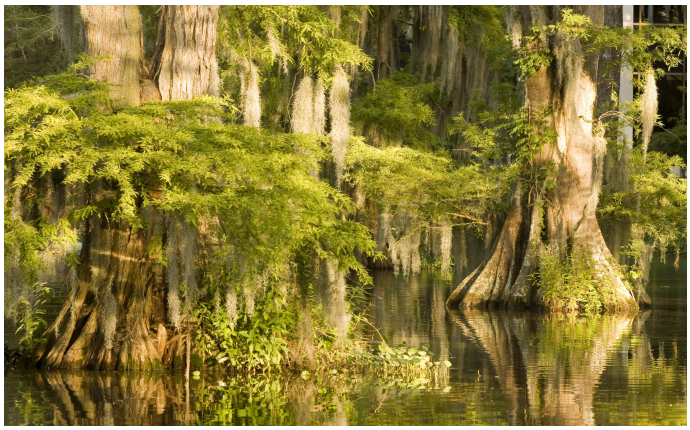
IFSA–NAFIPS 2019

Lafayette, Louisiana, USA

17–21 June 2019



Monday, 17 June 2019

8:30–9:00	Room A	Registration for CoProD 2019
9:00–12:45	Room A	CoProD 2019
15:30–19:30	Break Room	Registration
17:00–18:30	Room A	Summer School (Ildar Batyrshin)
		(open to all conference participants)

Two Case Studies and Applications of VMDPetro (Visualization and Data Mining Tool for Petroleum Reservoirs) in the Analysis of Reservoir Dynamics:

1. **Analysis of Well Interference Based on Well Production Data**
2. **Application of Dynamic 2D Maps in Aquifer Identification**

19:00	Meal Room	Welcome Reception

Room Legend

Room A	Madison
Room B	Cameron Vermillion (Courtyard)
Break Room	Lafayette Evangeline
Meal Room	Acadia Iberia

Tuesday, 18 June 2019

8:00–12:00 Break Room Registration

8:30–9:00 Room A Opening Remarks

9:00–10:00 Room A Keynote Lecture: James C. Bezdek

Applications of Maximin Sampling In BIG Data Cluster Analysis

10:00–10:20 Break Room Coffee Break

10:20–11:20 Room A Decision Making

Weighted averages in the ordered weighted average inflation

Ernesto Leon–Castro, Fabio Blaco–Mesa and Jose M. Merigo

Genetic Fuzzy System for Anticipating Athlete Decision Making in Virtual Reality

Anoop Sathyan, Henry S. Harrison, Adam W. Kiefer, Paula L. Silva, Ryan MacPherson and Kelly Cohen

10:20–11:20 Room B Control I

Fault Tolerant Controller Using Interval Type–2 TSK Logic Control Systems: Application to Three Interconnected Conical Tank System

Himanshukumar Patel and Vipul Shah

Multiple Modeling and Fuzzy Switching Control of Fixed–Wing VTOL Tilt–Rotor UAV

Yunus Govdeli, Anh Tuan Tran and Erdal Kayacan

Robust Evolving Granular Feedback Linearization

Lucas Oliveira, Anderson Bento, Fernando Gomide and Valter Leite

11:20–12:20 Room A Fuzzy Optimization and Decision Making: Theory, Algorithms and Applications

Interval Value Probability Optimization as a Unifying Theory to Optimization Under Generalized Uncertainty

Weldon Lodwick and K. David Jamison

Weight Estimation Methods Satisfying Desirable Properties in Interval AHP

Masahiro Inuiguchi

On Fuzzy Optimization Foundation

Lacio C. Barros, Nilmara Pinto and Estevo Esmi

11:20–12:20 Room B Control II

Cooperative FSEIF SLAM of Omnidirectional Mobile Multirobots

Ching–Chih Tsai and Ying–Che Lai

Comparative Study of Fuzzy Controller Optimization with Dynamic Parameter Adjustment based on Type–1 and Type–2 Fuzzy Logic

Marylu Lagunes, Oscar Castillo, Fevrier Valdez and Jose Soria

Adaptive Fuzzy Control for Full–State Constrained High–Order Stochastic Nonlinear System

Wei Sun and Shun–Feng Su

12:20–13:30 Meal Room Lunch

Tuesday, 18 June 2019

13:30–14:30 Room A **Aggregation and Pre–Aggregation Functions: Theory and Application I**

Aggregation operators to evaluate the relevance of classes in a fuzzy partition
Fabin Castiblanco, Camilo Franco De Los Ros, Javier Montero and J. Tinguaro Rodrguez

Aggregation and pre–aggregation functions. Theory and Applications:

A new axiomatic approach to interval–valued entropy
Humberto Bustince, Javier Fernandez, Iosu Rodriguez, Borja de la Osa, Cdric Marco–Detchart, Jos Antonio Sanz Delgado and Zdenko Tak

Local Properties of Strengthened Ordered Directional and other Forms of Monotonicity
Mikel Sesma–Sara, Laura De Miguel, Radko Mesiar, Javier Fernandez and Humberto Bustince

13:30–14:30 Room B **Modelling and Uncertainty I**

How Accurately Can We Determine the Coefficients: Case of Interval Uncertainty
Michal Cerny and Vladik Kreinovich

Modeling and Specification of Nondeterministic Fuzzy Discrete–Event Systems
Yongzhi Cao, Yoshinori Ezawa, Guoqing Chen and Haiyu Pan

Fuzzy Transform in Time Series Decomposition
Linh Nguyen and Vilem Novak

14:30–15:30 Room A **Aggregation and Pre–Aggregation Functions: Theory and Application II**

On the Influence of Interval Normalization in IVOVO Fuzzy Multi–class Classifier
Mikel Uriz, Daniel Paternain, Humberto Bustince and Mikel Galar

The Influence of Induced OWA Operators in a Clustering Method
Arnzazu Juro, Mikel Sesma–Sara, Jos Antonio Sanz Delgado and Humberto Bustince

14:30–15:30 Room B **Modelling and Uncertainty II**

Discrete and Continuous Logistic p–Fuzzy Models
Daniel Eduardo Snchez, Estevo Esmi and Lacio Carvalho Barros

Uncertainty in Boundary Conditions An Interval Finite Element Approach
Rafi L. Muhanna and Shahrokh Shahi

15:50–16:50 Room A **NAFIPS Event: A short movie about Lotfi A. Zadeh, followed by a talk on Lotfi A. Zadeh by Shahnaz Shahbazova**

17:00–20:15 Room A **Summer School (Ildar Batyrshin)**
(open to all conference participants)

Two lectures on an Outline and Applications of a General Theory of Similarity, Correlation and Association Measures:

1. **Theoretical foundations**
2. **Practical guides for constructing and application of DSM and CC for different types of data**

Wednesday, 19 June 2019

9:00–10:00 Room A **Keynote Lecture: Kelly Cohen**
The Promise and Potential of Genetic Fuzzy Systems for Bio–Medical Applications

10:00–10:20 Break Room Coffee Break

10:20–11:20 Room A **Mathematics I**

Generalized Pre–Aggregations
Luis Magdalena, Daniel Gmez, Javier Montero, Susana Cubillo and Carmen Torres

Functors among Categories of L–fuzzy partitions, L–fuzzy Pretopological Spaces and L–fuzzy Closure Spaces
Ji Moko and Irina Perfilieva

Measure of Interactivity on Fuzzy Process Autocorrelated: Malthusian model
Francielle Santo Pedro, Estevo Esmi and Lacio C. Barros

10:20–11:20 Room B Recommendation Systems

Personalized Promotion Recommendation through Consumer Experience Evolution Modeling
Cong Wang, Guoqing Chen, Qiang Wei, Guannan Liu and Xunhua Guo

Effect of Maximizing Recall and Agglomeration of Feedback on Accuracy
Ross Macdonald, Nikita Neveditsin, Pawan Lingras and Trent Hillard

New Fuzzy Approaches to Cryptocurrencies Investment Recommendation Systems
Vinicius Luis Amaral, Emmanuel Tavares Affonso, Alisson Marques Silva, Gray Farias Moita and Paulo Eduardo Almeida

11:20–12:20 Room A **Mathematics II**

Comparison Between Numerical Solutions of Fuzzy Initial Value Problems via Interactive and Standard Arithmetics
Vinicius Wasques, Estevo Esmi, Lacio C. Barros and Barnabs Bede

Calculations of Zadehs Extension of Piecewise Linear Functions
Nicole Skorupova and Jiri Kupka

Fuzzy Octonion Numbers: Some Analytical Properties
Ricardo Augusto Watanabe, Cibele Cristina Trinca Watanabe and Estevo Esmi

11:20–12:20 Room B **Relations And Preferences**

Canonical Fuzzy Preference Relations
Thomas Runkler

Typicality of Features in Fuzzy Relational Compositions
Martin Stepnicka, Nhung Cao, Michal Burda and Ales Dolny

The Dominance, Covering and Supercovering Relations in the Context of Multiple Partially Specified Reciprocal Relations
Ral Prez–Fernndez, Irene Diaz, Susana Montes and Bernard De Baets

12:20–13:30 Meal Room Lunch

12:20–13:30 Room A **IFSA Council Meeting**

Wednesday, 19 June 2019

13:30–14:30 Room A **Mathematics III**

Generalized Ordinal Sum Constructions of t–norms on Bounded Lattices
Antonin Dvorak and Michal Holcapek

Group Assessment of Comparable Items from the Incomplete Judgments
Tomoe Entani

Fuzzy Primeness in Quantales
Flaulles Bergamaschi and Regivan Santiago

13:30–14:30 Room B **Linguistic Expressions, Negation**

Fuzzy bi–implications Generated by t–norms and Fuzzy Negations
Antonio Diego Silva Farias, Claudio Callejas, Joo Marcos, Benjamin Bedregal and Regivan Santiago

On Modeling of Generalized Syllogisms with Intermediate Quantifiers
Petra Murinov

A formal Model of the Intermediate Quantifiers A few, Several, A little
Vilm Novk and Petra Murinov

14:30–15:30 Room A **Fuzzy Numbers**

A Ranking Method of Hexagonal Fuzzy Numbers based on their Possibilistic Mean Values
Worrawate Leela–Apiradee and Phantipa Thipwiwatpotjana

Some Notes on Additions of Interactive Fuzzy Numbers
Estevo Esmi, Lacio C. Barros and Vinicius Wasques

A Note on the Centroid, Yager Index and Sample Mean for Fuzzy Numbers
Juan Carlos Figueroa–Garca, Jairo Soriano and Miguel Melgarejo

14:30–15:30 Room B **Granularity**

Hybrid Connection between Fuzzy Rough Sets and Ordered Fuzzy Numbers
Piotr Prokopowicz and Marcin Szczuka

A New Method to Design A Granular Hierarchy Model with Information Granularity
Mingli Song and Yukai Jing

Granular Rules for Medical Diagnosis
Shusaku Tsumoto and Shoji Hirano

15:30–15:50 Break Room Coffee Break

15:50–17:20 Room A **Roundtable discussion: Reminiscences of Lofti A. Zadeh**
Anca Ralescu, Jim Bezdek, Vladik Kreinovich, Laszlo Koczy and Rudolf Seising
(with video contributions from Didier Dubois and Henri Prade)

19:00 Meal Room **Banquet**

Thursday, 20 June 2019

9:00–10:00 Room A — Keynote Lecture: Susana Montes
Divergence measures as a tool for comparing sets and measuring their imprecision

10:00–10:20 Break Room — Coffee Break

10:20–11:20 Room A — Applications I

Intuitionistic Fuzzy Model of Jam Regions and Rush Hours for the Time Dependent Traveling Salesman Problem
Ruba Almahasneh, Boldizsar Tuu–Szabo, Peter Foldesi and Laszlo Koczy

A Petri Net Model for Home Automation
Jean–David Hsu and Tsau Young Lin

Back to Classics: Controlling Smart Thermostats with Natural Language ... with personalization
Saltanat Tazhibayeva, Panagiota Karava and Julia Rayz

10:20–11:20 Room B — Maps & Memory

On the Implementation of Evolving Dynamic Cognitive Maps
Joao Paulo Carvalho

Hospital Data Interpretation: A Self–Organizing Map Approach
Javid Pourkia, Shahram Rahimi and Kourosh Teimouri Baghaei

A Subsethod Interval Associative Memory with Competitive Learning
Peter Sussner, Estevo Esmi and Luis Gustavo Jardim

11:20–12:20 Room A — Applications II

Least Square Method with Quasi Linearly Interactive Fuzzy Data: Fitting an HIV dataset
Nilmara J.B. Pinto, Estevo Esmi, Vinicius Wasques and Lacio C. Barros

STRESSDIAG: A Fuzzy Expert System for Diagnosis of Stress Types including Positive and Negative Rules
Thi Nu Mai, Hoang Phuong Nguyen and Tien Dung Hoang

Fuzziness and Humor: Aspects of Interaction and Computation
Julia Taylor Rayz and Victor Raskin

11:20–12:20 Room B — Inter–Relation Between Interval and Fuzzy Techniques

How to Fuse Expert Knowledge: Not Always "And" But a Fuzzy Combination of "And" and "Or"
Christian Servin, Olga Kosheleva and Vladik Kreinovich

Why Grade Distribution Is Often Multi–Modal: an Uncertainty–Based Explanation
Olga Kosheleva, Christian Servin and Vladik Kreinovich

Logarithms Are Not Infinity: A Rational Physics–Related Explanation of the Mysterious Statement by Lev Landau
Francisco Zapata, Olga Kosheleva and Vladik Kreinovich

12:20–13:30 Meal Room — Lunch

12:20–13:30 Room A — NAFIPS Board Meeting

Thursday, 20 June 2019

13:30–14:30 Room A **Data Modelling**

Towards Hybrid Uncertain Data Modeling in Databases
Li Yan and Zongmin Ma

Modeling Probabilistic Data with Fuzzy Probability Measures in UML Class Diagrams
Jie Sheng, Li Yan and Zongmin Ma

Fuzzy Transfer Learning in Heterogeneous Space using Takagi–Sugeno Fuzzy Models
Hua Zuo, Guangquan Zhang and Jie Lu

13:30–14:30 Room B **Collaborative Search and Parameter Optimization**

Design of Optimal Fuzzy Controllers for Autonomous Mobile Robots Using the Grey Wolf Algorithm
Eufronio Hernandez, Oscar Castillo and Jose Soria

Firefly Algorithm and Grey Wolf Optimizer for Constrained Real–Parameter Optimization
Luis Rodriguez, Oscar Castillo, Mario Garcia Valdez and Jose Soria

Type–2 Fuzzy Logic Augmentation of the Imperialist Competitive Algorithm with Dynamic Parameter Adaptation
Emer Bernal, Oscar Castillo, Jose Soria and Fevrier Valdez

15:00–16:00 Room A **NAFIPS General Meeting**

17:30 **Randol's Restaurant et Salle de Danse**
Social Event: Cajun Music, Dancing, and Seafood

The bus, seating 55, is scheduled to leave the hotel at 17:30. If more than 55 are going, the bus will return (around 18:00) for a second load. Randol's is located at 2320 Kaliste Saloom Rd. in Lafayette, Louisiana.

Friday, 21 June 2019

9:00–10:00 Room A **Keynote Lecture: Janusz Kacprzyk**
Cognitive biases in choice and decision making: a potential role of fuzzy logic

10:00–10:20 Break Room Coffee Break

10:20–11:20 Room A **Classification & Clustering I**

Information Transmission and Nonspecificity in Feature Selection
Pasi Luukka and Christoph Lohrmann

An Approach to Pulse Symbols Based Fuzzy Reasoning in Diagnosis of Traditional Vietnamese Medicine Including the Importance of Symptoms
Hoang Phuong Nguyen, Anh Nguyen and Hong Thuy Truong

Fuzzy Rule–based Classification with Hypersphere Information Granules
Chen Fu and Wei Lu

10:20–11:20 Room B **Neural Networks and Interpretations**

Simulating the behaviour of Choquet–like (pre) Aggregation Functions for Image Resizing in the Pooling Layer of Deep Learning Networks
Camila Alves Dias, Jessica Camila Saldivia Bueno, Eduardo Nunes Borges, Giancarlo Lucca, Helida Santos, Graaliz Pereira Dimuro, Humberto Bustince, Paulo Lilles Jorge Drews Junior, Silvia Silva da Costa Botelho and Eduardo Palmeira

Fuzzy Systems with Sigmoid–based Membership Functions as Interpretable Neural Networks
Barnabas Bede

An Interpretation of the Fuzzy Measure Associated with Choquet Calculus for a HIV Transference Model
Beatriz Laiate, Rosana M. Jafelice, Estevo Esmi and Lacio C. Barros

11:20–12:20 Room A **Classification & Clustering II**

Fuzzy Classifier with Convolution for Classification of Handwritten Digits
Rui Yin and Wei Lu

Granular Computing: On Study of Collaborative Evidential Clustering Algorithm with Applications
Yixuan Qiao, Shoumei Li and Thierry Denoeux

Relevance of Polynomial Order in Takagi–Sugeno Fuzzy Inference Systems applied to Diagnosis Problems
Emanuel Ontiveros–Robles, Patricia Melin and Oscar Castillo

11:20–12:20 Room B **Similarities and Antonym**

Fuzzy Set Similarity between Fuzzy Words
Valerie Cross and Valeria Mokrenko

Integrating Antonyms in Fuzzy Inferential Systems via Anti–Membership
Scott Dick and Peter Sussner

Contrast Similarity Measures of Fuzzy Sets
Ildar Batyrshin, Olga Kosheleva, Vladik Kreinovich, Nailya Kubysheva and Raouf Akhtiamov

12:20–13:30 Meal Room Lunch

13:30–13:40 Room A **Conference Closing**

15:00 **Bus to FUZZ–IEEE in New Orleans**
The charter bus to the JW Marriott Hotel in New Orleans leaves the Wyndham Garden Inn at 15:00.