IFSA World Congress
NAFIPS Annual Meeting

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INVESTMENTS IN EDUCATION DEVELOPMENT

Basic Informations

- What: 9th Joint IFSA-NAFIPS 2013 World Congress
- Where: University of Alberta, Edmonton, Canada
- When: June 24–28, 2013

Welcome Message

Part of Welcome Message from General Co-Chairs:

”*This Congres brings a plethora of new ideas, innovative methodologies, algorithmic developments, and challenging applications. In the recent years, we have been witnessing a wealth of promising directions: granular computing, intensive web-based research, bioinformatics, type-2 fuzzy sets, rough sets, . . . In all of them we are seeing so many exciting developments. New innovative thinking about fuzzy modelling, control, and pattern recognition has become highly visible. All of these pursuits are well reflected in the programme of the Congress.*”

Keynote Presentations

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- Toward a Restriction-Centered Theory of Truth and Meaning (Lotfi A. Zadeh)
- Bio-Inspired Optimization of Type-2 Fuzzy Systems in Intelligent Control Applications (Oscar Castillo)
- Fuzzy Visualization Method of Atmosfield and Kansei-Texture (Kaoru Hirota, Fangyan Dong)
- A Special Role of Usuality Qualificiation in Computing with Words: Applications in Multiple Problem Areas (Janusz Kacprzyk)
- Foundations of a Fuzzy Logic-based Theory of Behavioral Decisions (Rafik A. Aliev).

Special Lectures:

- Techniques of Fuzzy Natural Logic in Modelling (Vilem Novak)
- Soft Computing in/by Analytics (Christer Carlsson)
- Fuzzy Information Retrieval: One Mans Journey (Donald H. Kraft)
- BCI Bio-Computational Intelligence vs Brain Computer Interface (Chin-Teng Lin)
- Type 1 to Full Type 2, . . . Full Type n Fuzzy System Models (Burhan Türkşen)
- Fuzzy Logic as a Geometry (Antonio Di Nola).

Selected Topics:

- fuzzy sets and fuzzy logic
- mathematical foundations of fuzzy sets and fuzzy systems
- approximate reasoning, fuzzy inference models, and soft computing
- fuzzy decision analysis, decision making, optimization, and design
- fuzzy methods in data analysis, statistics and imprecise probability
- fuzzy databases and information retrieval
- fuzzy pattern recognition and image processing
- fuzzy control and robotics
- possibility theory
- fuzzy sets and logic in ontology, web, and social networks
- fuzzy preference modelling
- fuzzy sets in operations research and manufacturing
- fuzzy database mining and financial forecasting
- fuzzy neural networks

Fuzzy Logic as a geometry

Fuzzy logic is a generalization of classical logic. Since Boolean Algebras are the algebraic models of Classical Logic. So mathematical structures connected with Fuzzy Logic have to be generalizations of Boolean Algebras. The study of fuzzy logic can be considered in two different point of view in narrow and in broad sense. One of the most important fuzzy logics, in narrow sense is the many-valued Łukasiewicz logic. The results concerning the geometric nature of fuzzy logic in narrow sense is very important.

Soft Computing in/by Analytics

Analytics has a similar agenda as management science and is working with the same industrial and business context to support managerial planning, problem solving and decision making. Analytics has a broader scope in terms of methods – besides models and algorithms it also works with statistical methods and advanced technology for handling data, information and knowledge. Analytics develops methods to handle the challenges of big data and to tackle and deal with the complexities of almost real-time problem-solving and decision making in an industrial and business context. Soft computing finds way to work with imprecision in data, information and knowledge which will offer effective methods and tools for tackling complexity, i.e. soft computing can contribute to more effective analytic tools for almost real-time problem-solving and decision making which is threatened to be drowned by the big data challenges. The new Analytics methods and technology offer improved instruments for developing soft computing. The symbiosis between Soft Computing and Analytics offers roadmaps for new research directions in fuzzy systems research and an IFSA research agenda.

Pythagorean Fuzzy Subsets

Central to the use of fuzzy sets is the provision of membership grades. In order to enhance the capability of fuzzy sets to capture and model user provided membership information researchers have introduced non-standard second order fuzzy sets such as intuitionistic and interval-valued. Recently Yager introduced another class of nonstandard fuzzy subsets called Pythagorean fuzzy sets. These nonstandard fuzzy sets allow for the inclusion of imprecision and uncertainty in the specification of membership grades.