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Society briefs

2008 journal subscription rates for EUSFLAT members

In the last months, we have informed the EUSFLAT members several times that this year's journal subscription rates were still a pending issue. Thanks to our membership manager, Thomas Vetterlein, who directly negotiated with the publishing houses, we can now offer reduced journal subscription rates for 2008 like in previous years.

The prices are as follows:

- *Fuzzy Sets and Systems*
USD 276
- *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*
USD 85
- *International Journal of Approximate Reasoning*
USD 122
(the 2008 subscription includes Volumes 47-49)
- *Journal of Advanced Computational Intelligence and Intelligent Informatics*
EUR 80



The publishers have promised to us that all issues so far published in 2008 will be sent to the subscribers, so that the no issues are missed. In case you are interested, please contact Thomas Vetterlein as soon as possible (membership@eusflat.org).

Once again, we are deeply sorry for any inconveniences and we will do our best that such an unpleasant situation will not occur anymore in the following years!

Prof. Dan Butnariu deceased



Professor Dan Butnariu has passed away on July 4, 2008. Born in Hirlau (Romania) on February 1, 1951, he received his PhD in 1980 in Iași (Romania), where he taught until 1983. After his emigration to Israel he worked first at the Weizmann Institute of Science and moved to the University of Haifa in 1986 where he served as chair of the Department of Mathematics in 1997–1999. He held visiting positions at the Johannes Kepler University Linz, at the University of Texas, in Rio de Janeiro, and at the City University New York. Besides his work on fuzzy topology, fuzzy measures and fuzzy games, he was an active researcher in other fields of applied mathematics (approximation theory, convex analysis, operator theory, and mathematical economics). In total, he published over 70 papers, two monographs and one edited volume. Among others, he was a permanent member of the Program Committee of the annual Linz Seminar on Fuzzy Set Theory

Job openings

Position Available for a Research Assistant

A research assistant position is available in Mieres (Spain, Asturias) in the European Centre for Soft Computing (ECSC).

We are firstly interested by contracting a pre-doctoral student, but this call is open to any interested candidate. Thank you for forwarding this call to your students.

Topic: Real-world Applications of Metaheuristics and/or Fuzzy Logic

The research domains are the following:

- Application of meta-heuristics (ant colony optimization, evolutionary algorithms)
- Fuzzy Logic/Fuzzy Systems
- Single- and multi-objective combinatorial optimization problems
- Visual Science Maps design and mining
- Data mining

The successful candidate will be contracted for one year then, after an evaluation, could extend his contract up to 4 years (in total). The annual gross salary is 18000 Euros. The contract starts in September or in October.

Research Unit: Applications of Fuzzy Logic and Evolutionary Algorithms

Required academic degree: Degree on Computer Science, Engineering, Maths or related disciplines.

Requirements:

- Good background on ant colony optimization, evolutionary algorithms, metaheuristics, fuzzy systems, machine learning and knowledge discovery, graph theory, algorithm theory and/or information visualization
- Good computer programming skills in C, C++ or Java and Visual Basic
- Fluent English skills (written and spoken)

European Centre for Soft Computing (ECSC)

The European Centre for Soft Computing is a research and advancement centre promoted by the Foundation for the Advancement of Soft Computing and is located in Mieres, Asturias. Its main objectives are the basic and applied research in the Soft Computing area as well as the technology transfer in industrial applications of intelligent systems design for the resolution of real problems. The scientific activities are guided by a Scientific Committee. Besides, the Centre wants to be a meeting point for worldwide experts and also a place where PhD students and young researchers can develop advanced research.

More details about the center and the position can be found here:

<http://www.softcomputing.es/en/offer.php?cod=29>

Please, send directly your application (with your complete CV) to arnaud.quirin@softcomputing.es (Arnaud Quirin)
(Phone: +34 985 456 545)

PhD dissertations

Martin Štěpnička

Fuzzy Transform and its applications to problems in engineering practice

Summary: The fuzzy set theory initiated by L.A. Zadeh provided mathematicians with an appropriate tool for modelling the vagueness phenomenon and shed new light into the control theory for engineers. Later, in 1985, T. Takagi and M. Sugeno invented a particular fuzzy model which became very popular due to its approximation ability. Finally, in the 1990's, several studies aimed at approximation properties of the other widely used fuzzy models.

Based on the historical development briefly recapitulated above, a new field called fuzzy approximation focusing on approximation properties of fuzzy models and development of new methods using fragments of the fuzzy set theory has been established. Fuzzy transform (F-transform), a particular method belonging to this field, is the main object of the study in this thesis.

Fuzzy transform has been proposed as a pilot fuzzy approximation technique with the aim of being applied in up to now unusual application fields such as numerical solution of differential equations, for example. On the other hand, such techniques, including the fuzzy transform, are not excluded from the other techniques involved in fuzzy systems. Vice-versa, if they are correctly built (i.e. if they respect rules of law of fuzzy logics and the state of arts in fuzzy system), they provide us with powerful tools for dealing with typical problems for implementations of fuzzy system. The goal of this thesis is to investigate the fuzzy transform from the approximation point of view and to incorporate it in further numerical methods. In general, we talk about numerical methods on the basis of fuzzy approximation models. Moreover, the technique is studied in the context of other fuzzy models and finally implemented in automatic control, a typical field for fuzzy approaches.

The structure of the work is as follows. Chapter 1 provides an introduction to the study and a brief state of the art of the studied fields. Chapter 2 recalls basic definitions and facts about the F-transform method and introduces new results useful for further chapters. Chapter 3 focuses on an extension of the F-transform for function with two or more variables and presents analogous results to those from the one dimension. In Chapter 4, a possible application to numerical computation of partial differential equations is studied.

Chapter 5 is devoted to the so-called additive normal forms. It introduces a class of additive normal forms stemming from the one defined in [59]. A representation of the F-transform as a special case of the additive normal form, its extension to a normal form with other possible operations and answering natural questions about the relations between F-transform and other fuzzy approximation techniques is the main aim of the chapter.

Chapter 6 introduces additive interpretations of fuzzy rule bases and aims at their fuzzy interpolation properties. It presents a possible way how to identify a rule base with the additive interpretation using the F-transform. Chapter 7 is the application part of the Thesis which deals with a heuristic proposal for fuzzy control stemming from additive normal forms and the F-transforms. This chapter explicitly uses results from the previous chapters to demonstrate properties of the proposed method. Good behaviour of a system controlled by the proposed method is demonstrated on a real application: control of an autonomous robot. Finally, Chapter 8 provides a neural network point of view to the F-transform and presents experiments justifying this approach. The last chapter summarizes the results from the thesis and briefly discusses them.

Advisor: Irina Perfilieva, IRAFM - Institute for Research and Applications of Fuzzy Modeling, University of Ostrava

Reviewers: Bernard De Baets, Gent University; Ulrich Bodenhofer, Johannes Kepler Universität Linz; Miroslav Pokorný, VŠB – Technical University Ostrava

About the author: Martin Štěpnička was born in Pardubice, Czech Republic in 1979. He obtained his MSc degree in Applied Mathematics in 2002 at the University of Ostrava, Czech Republic. Since 2004 he has been a researcher at the IRAFM under the University of Ostrava. He obtained his PhD in February 2008. E-mail: Martin.Stepnicka@osu.cz

Book announcements and reviews

Book descriptions



D. Ruan, F. Hardeman, K. van der Meer, (Eds.)
Intelligent Decision and Policy Making Support Systems
Springer, 2008. 318 pages. ISBN-978-3-540-78306-0.
Link: <http://www.springer.com/978-3-540-78306-0>

Description: This book covers a number of representative applications of intelligent decision support systems applications in society and policy support, including general methodologies, case studies, on-going R&D projects, and practical applications. These applications cover *Intelligent Decision and Policy Making Support Systems* ranging from risk modelling for policy making, consensus modelling in group decision making, fuzzy data envelopment analysis, cognitive orientation in business intelligence, personalized pedestrian navigation systems, knowledge based recommender systems, Web resource discovery and selection, machine learning based intelligent decision support systems, handling uncertain and qualitative information, fault diagnosis, safety analysis, radioactive waste management policy decision making, Belgian long-term sustainable energy strategy, to nuclear emergency management. Major contributions of this book are highly related to the well-established international FLINS series conferences on applied computational intelligence (1994-2008) on this topic and some current ongoing research projects at the Belgian Nuclear Research Centre (SCK•CEN) in Mol, Belgium.

Brief announcements

- D. Ruan, F. Hardeman, K. van der Meer, (Eds.), *Intelligent Decision and Policy Making Support Systems*, Springer, 2008. 318 pages. ISBN-978-3-540-78306-0.
<http://www.springer.com/978-3-540-78306-0>
- N. T. Nguyen, *Advanced Methods for Inconsistent Knowledge Management*, Springer, 2008. 356 pages. ISBN-978-1-84628-888-3.
<http://www.springer.com/west/home/computer/artificial?SGWID=4-147-22-173734631-0>
- S. Miyamoto, H. Ichihashi, K. Honda, *Methods in c-Means Clustering with Applications*, Springer, 2008. 248 pages. ISBN-978-3-540-78736-5.
<http://www.springer.com/engineering/book/978-3-540-78736-5>
- M. Nikraves, J. Kacprzyk, L.A. Zadeh, (Eds.), *Forging New Frontiers: Fuzzy Pioneers I*, Springer, 2007. 460 pages. ISBN-978-3-540-73181-8.
<http://www.springer.com/engineering/book/978-3-540-73181-8>
- B. Apolloni, W. Pedrycz, S. Bassis, D. Malchiodi, *The Puzzle of Granular Computing*, Springer, 2008. 460 pages. ISBN-978-3-540-79863-7.
<http://www.springer.com/engineering/book/978-3-540-79863-7>

Conferences and calls for papers

Conference reports

IPMU'08: Information Processing and Management of Uncertainty in Knowledge-Based Systems (<http://www.gimac.uma.es/ipmu08/>)

The 12th IPMU International Conference was held June 23 to 27, 2008, in a hotel in the beach of La Carihuela in Torremolinos, Málaga.



The conference was organized by the Department of Applied Mathematics of the Universidad de Málaga, being its Scientific Co-Chairs Luis Magdalena (European Centre for Soft Computing), José Luis Verdegay (Universidad de Granada) and Manuel Ojeda-Aciego (Universidad de Málaga).

Almost 300 participants, theoreticians and practitioners working on methods for the management of uncertainty and aggregation of information in intelligent systems, could exchange results and ideas. Many PhD students were able to attend and EUSFLAT supported eight of them by a grant. Attendees were coming from 37 countries around the world, to participate in the different parallel sessions (including 17 special sessions) during 5 days, in addition to the following five plenary lectures, given by Lotfi Zadeh (University of California at Berkeley), Itzhak Gilboa (University of Tel-Aviv), Enrique Ruspini (SRI International), Marco Dorigo (Université Libre de Bruxelles), and Serafin Moral (Universidad de Granada).

As in previous editions of the conference, the Kampe de Fériet award was given to one prestigious researchers in the topics of IPMU. In this edition the award was given to Prof. Enric Trillas (his address on the occasion of the prize can be downloaded from the web pages of the conference, section news).

The success of such an event is mainly due to the hard work and dedication of a number of people, and the collaboration of several institutions. We want to acknowledge the help of the members of the Advisory Board and the International Programme Committee, the additional reviewers, the organizers of special sessions, and the local organizing committee. All of them deserve many thanks for having helped to attain the goal of providing a balanced event with a high level of scientific exchange and a pleasant environment.

Manuel Ojeda-Aciego, IPMU'08 Chair

First Summer School on Copulas (SSC 2008), Linz, Austria, September 17-19, 2008.

<http://www.fill.jku.at/ssc>

The First Summer School on Copulas will be held at Johannes Kepler University (Linz, Austria) in the period of 17-19 September 2008 and is organized by the Department of Knowledge-Based Mathematical Systems. This Summer School aims at providing a meeting point for exchanging ideas and presenting new directions on the theory of copulas and related applications.

Keynote speakers for this edition of the Summer School are:

- C. Klüppelberg
- L. Rüschendorf

Upcoming EUSFLAT-Endorsed Events

- **4th International Conference on Soft Methods in Probability and Statistics (SMPS 2008)**, Toulouse, France, September 8-10, 2008.

<http://www.irit.fr/smps08/>

- **Logic, Algebra and Truth Degrees: First Conference of the Working Group on Mathematical Fuzzy Logic**, Siena, Italy, September 8-11, 2008.

<http://www.mat.unisi.it/~latd2008/pag-index>

- **8th International Conference on Hybrid Intelligent Systems (HIS 2008)**, Barcelona, Spain, September 10-12, 2008.

<http://his2008.lsi.upc.edu/index.html>

- **14th Spanish Conference on Fuzzy Logic and Technologies (ESTYLF 2008)**, Mieres, Asturias, September 17-19, 2008.

<http://www.softcomputing.es/estylf08/es/portada.php>

- **First Summer School on Copulas**, Linz, Austria, September 17-19, 2008.

<http://www.fill.jku.at/ssc>

- **8th International FLINS Conference on Computational Intelligence in Decision and Control (FLINS 2008)**, Madrid, Spain, September 21-24, 2008.

<http://www.mat.ucm.es/congresos/flins2008/>

- **3rd International Symposium Advances in Artificial Intelligence and Applications (AAIA'08)**, Wilsa, Poland, October 20-22, 2008.

<http://www.imcsit.org/?cont=91&type=page&page=72>

- **5th IEEE International Conference on Soft Computing as Transdisciplinary Science and Technology (CSTST 2008)**, Paris, France, October 26-30, 2008.

<http://sigappfr.acm.org/cstst08/>

- **French Days on Fuzzy Logic and Applications (LFA 2008)**, Lens, France, October 16-17, 2008.

<http://www.cril.univ-artois.fr/lfa2008/LFA%202008.php>

- **5th International Conference on Modeling Decisions for Artificial Intelligence (MDAI 2008)**, Sabadell, Catalonia, Spain, October 30-31, 2008.

<http://www.mdai.cat/mdai2008/>

Other Events

- **2008 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT'08)**, Sydney, Australia, December 9-12, 2008.
<http://datamining.it.uts.edu.au/wi08/html/iat/?index=about>
- **8th IEEE International Conference on Data Mining (ICDM'08)**, Pisa, Italy, December 15-19, 2008.
<http://icdm08.isti.cnr.it/>
- **IEEE Symposium Series on Computational Intelligence**, Nashville, TN, USA, March 30 – April 2, 2009. Deadline: October 31, 2008.
<http://datamining.it.uts.edu.au/wi08/html/iat/?index=about>

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