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Society Briefs

Joint 13th IFSA World Congress and 6th EUSFLAT Conference



Last call for participation: Our 6th EUSFLAT Conference will take place jointly with the 13th IFSA World Congress in Lisbon, Portugal, in the period July 20–24, 2009. Make sure you do not miss this unique event — registration is still possible (<http://www.eusflat2009.org>).

Student grants: Also this time, EUSFLAT supports young emerging researchers by student grants. An overwhelming number of applications have been received and EUSFLAT is proud to award eight grants.

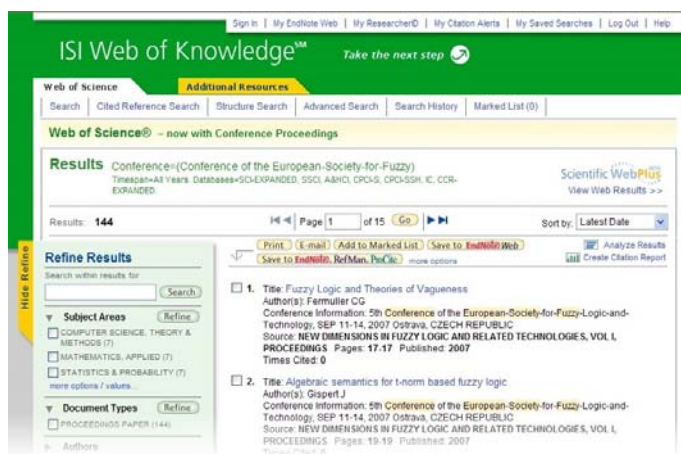
EUSFLAT General Assembly: On the occasion of our conference, a EUSFLAT General Assembly will be held. Exact date, time and location are not fixed yet. All members of EUSFLAT will be informed by e-mail as soon as this information is available.

Board elections: This time, we have to elect a new board for the period 2009–2011. Candidatures must be submitted no later than June 19, 2009, to the secretary of our society, Prof. Irina Perfilova (secretary@eusflat.org). Candidatures must comply with the EUSFLAT Board Election Guidelines (see <http://www.eusflat.org/documents/ElectionsGuidelines.pdf>).

EUSFLAT Conference Proceedings in Conference Proceedings Citation Index

We are proud to announce that our efforts to include the proceedings of the 5th EUSFLAT Conference (Ostrava, Czech Republic, September 11–14, 2007) into the [Thomson Reuters Conference Proceedings Citation Index](#) were finally successful (thanks to the perseverance of the colleagues in Ostrava). This particularly means that all papers published in these proceedings are now visible in the ISI Web of Science®.

After the proceedings of the Joint EUSFLAT-LFA Conference (Barcelona, September 7–9, 2005), this is already the second EUSFLAT conference whose proceedings are included in this important citation index. We hope we can continue with this “tradition” and manage to include the proceedings of all further editions of our EUSFLAT conference into this index too — which strongly upvalues our conferences and the papers published in their proceedings.



PhD Dissertations:

Ana Casali

On Intentional and Social Agents with Graded Attitudes

Summary: The agent research community holds that there are some application domains where agent technologies will play a crucial role in the near future. In order to achieve the full potential of agent approaches the research and development resources should be focused along several key directions. One of them is the development of different theories, architectures, technologies and infrastructures required to specify, design, implement and manage agent-based systems. The work reported in this Thesis can be placed within this direction.

The central contribution of this dissertation is the proposal of a graded BDI agent model (g-BDI), specifying architecture capable of representing and reasoning with graded mental attitudes. We consider that making the BDI architecture more flexible will allow us to design and develop agents capable of improved performance in uncertain and dynamic environments, serving other agents (human or not) that may have a set of graded motivations. This work presents a contribution to the agent architectures field, because of the relevance of the BDI architecture and because some of our ideas may be adapted to other agent architectures.

In the g-BDI model, agent's graded attitudes have an explicit and suitable representation. Belief degrees represent the extent to which the agent believes propositions describing the state of the world. Degrees of positive or negative desires allow the agent to set different levels of preference or rejection for some states respectively. Intention degrees also give a preference measure but, in this case, modelling the cost/benefit trade off of achieving an agent's goal. Then, agents having different kinds of behaviour can be modelled on the basis of the representation and interaction of their graded beliefs, desires and intentions. The formalization of the g-BDI agent model is based on Multi-context systems (MCS). These systems allow different formal (logical) components to be defined and interrelated. Parsons et al. firstly used them to formalize BDI agents. The MCS specification of agents has several advantages both from a software engineering and a logical point of view.

In order to represent and reason about graded notions of belief, desire and intention, in the g-BDI model we followed the approach developed by Hájek et al. where uncertainty reasoning is dealt with by defining suitable modal theories over suitable fuzzy logics. This formalization allows us to represent the different mental attitudes within a uniform fuzzy logical framework. A sound and complete axiomatics for representing each graded attitude is proposed. As for the agent desires, besides representing graded positive desires, our g-BDI agent model includes the formalization of graded negative desires, to be able to represent as well those states rejected by the agent. We base our proposal on the bipolar possibilistic model due to Benferhat et al. and we advance the state of the art by giving a sound and complete axiomatics and by defining different logical schemas to represent some additional constraints over conflicting preferences. In addition, we present a logical system for graded intentions and we show that the framework is expressive enough to describe how desires (either positive or negative), together with other information, can lead agents to intentions.

In order to cope with the operational semantics aspects of the g-BDI agent model, we first define a Multi-context Calculus (MCC) for multi-context systems execution. We expect that MCC will be able to specify different kinds of MCSs and we use it for giving semantics to the g-BDI agent model. Through the MCC we provide the g-BDI agent model with a computational meaning and, in this way, we move one step closer to the development of an interpreter for g-BDI agents. Although process calculi have been used in the past to model multiagent systems, we have considered that the modular structure that MCS provides to the architecture of an agent would permit a similar treatment of single agents as well. We think that the implementation of agent architectures using process calculi, in particular ambient calculus, would give a uniform framework for agent architectures, multiagent systems as well as electronic institutions.

Furthermore, a software engineering process to develop g-BDI agents in a multiagent scenario is presented. The aim of the proposed methodology is to guide the design of a multiagent system starting from a real world problem. The methodology presented has been built by adapting and extending previous approaches in order to engineer agents with a more complex internal architecture. Through the design and implementation of a Tourism recommender system, where one of its principal agents is modelled as a g-BDI agent, we show that the agent model is useful to design and implement concrete agents in real world applications.

Finally, using a case study we have made some experiments concerning the flexibility and performance of the g-BDI agent model, demonstrating that this agent model is useful to develop agents showing varied and rich behaviours. We also show that the results obtained by these particular recommender agents using graded attitudes improve those achieved by agents using non-graded attitudes.

Keywords: BDI agents, uncertainty, graded preferences, multi-context systems, fuzzy modal logic.

Advisors: Lluís Godo and Carles Sierra, Institut d'Investigació en Intel·ligència Artificial (IIIA – CSIC), Spain.

About the author: She was born in Rosario, Argentina. In 1982 she received the Mathematics Degree from the National University of Rosario (Universidad Nacional de Rosario), Rosario, Argentina. In December 2008 she was awarded her PhD degree on Information Technologies from Girona University (Universitat de Girona), Spain. From 1982 to 1990 she has been a teaching Assistant at Universidad Nacional de Rosario (UNR), Argentine, and since 1990 she is Professor at UNR, carrying out research on Knowledge Representation and Reasoning, and on Logical Agent Architectures. She is currently the Head of the Computer Science Department at the same University. (acasali@fceia.unr.edu.ar).

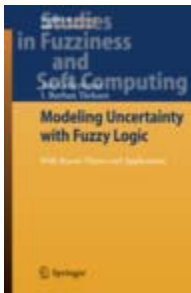
Bibliographic Information: The thesis is available at <http://www.iiia.csic.es/~godo/AnaCasali/thesisAnaCasali.pdf>, and an extended abstract can also be found at <http://www.iiia.csic.es/~godo/AnaCasali/extended-abstract.pdf>.

Book announcements and reviews

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>
- J. Galindo, (Ed.), *Handbook of Research on Fuzzy Information Processing in Databases* (2 Volumes), Information Science Reference, 2008. 926 pages. ISBN-978-1-59904-853-6.
<http://www.igi-pub.com/reference/details.asp?id=7568>
- W. Pedrycz, A. Skowron, V. Kreinovich, (Eds.), *Handbook of Granular Computing*, Wiley, 2008, 1148 pages, ISBN-978-0-470-03554-2.
<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470035544.html>
- B. Liu, *Theory and Practice of Uncertain Programming*, Springer, 2009. 205 pages. ISBN-978-3-540-89483-4.
<http://www.springer.com/engineering/book/978-3-540-89483-4>
- S. Das, A. Abraham, A. Konar, *Metaheuristic Clustering*, Springer, 2009. 300 pages. ISBN-978-3-540-92172-1.
<http://www.springer.com/engineering/book/978-3-540-92172-1>
- T. Munakata, *Fundamentals of the New Artificial Intelligence*, Springer, 2nd edition, 2008. ISBN-978-1-84628-838-8.
<http://www.springer.com/computer/artificial/book/978-1-84628-838-8>
- B. Bouchon-Meunier, C. Marsala, M. Rifqi, R. R. Yager (Eds.), *Uncertainty and Intelligent Information Systems*, World Scientific, 2008. 536 pages. ISBN 978-981-279-234-1.
<http://www.worldscibooks.com/compsci/6747.html>
- A. Celikyilmaz, I. B. Türksen, *Modeling Uncertainty with Fuzzy Logic*, Springer, 2009, ISBN-978-3-540-89923-5.
<http://www.springer.com/engineering/book/978-3-540-89923-5>
- X. Wang, D. Ruan, E. E. Kerre, *Mathematics of Fuzziness—Basic Issues*, Springer, 2009, ISBN- 978-3-540-78310-7.
<http://www.springer.com/engineering/book/978-3-540-78310-7>

Book descriptions



A. Celikyilmaz, I. B. Türksen
Modeling Uncertainty with Fuzzy Logic
Studies in Fuzziness and Soft Computing, 2009. 400 pages. ISBN-978-3-540-89923-5.
Link: <http://www.springer.com/engineering/book/978-3-540-89923-5>

Description: The objective of this book is to present an uncertainty modeling approach using a new type of fuzzy system model via "Fuzzy Functions". Since most researchers on fuzzy systems are more familiar with the standard fuzzy rule bases and their inference system structures, many standard tools of fuzzy system modeling approaches are reviewed to demonstrate the novelty of the structurally different fuzzy functions, before we introduced the new methodologies. To make the discussions more accessible, no special fuzzy logic and system modeling knowledge is assumed. Therefore, the book itself may be a reference for some related methodologies to most researchers on fuzzy systems analyses. For those readers, who have knowledge of essential fuzzy theories, Chapter 1, 2 should be treated as a review material. Advanced readers ought to be able to read chapters 3, 4 and 5 directly, where proposed methods are presented. Chapter 6 demonstrates experiments conducted on various datasets.



X. Wang, D. Ruan, E. E. Kerre
Mathematics of Fuzziness—Basic Issues
Springer, 2009. 220 pages. ISBN- 978-3-540-78310-7.
Link: <http://www.springer.com/engineering/book/978-3-540-78310-7>

Description: Mathematics of Fuzziness—Basic Issues introduces a basic notion of 'fuzziness' and provides a conceptual mathematical framework to characterize such fuzzy phenomena in Studies in Fuzziness and Soft Computing. The book systematically presents a self-contained introduction to the essentials of mathematics of fuzziness ranging from fuzzy sets, fuzzy relations, fuzzy numbers, fuzzy algebra, fuzzy measures, fuzzy integrals, and fuzzy topology to fuzzy control in a strictly mathematical manner. It contains most of the authors' research results in the field of fuzzy set theory and has evolved from the authors' lecture notes to both undergraduate and graduate students over the last three decades. A lot of exercises in each chapter of the book are particularly suitable as a textbook for any undergraduate and graduate student in mathematics, computer science and engineering. The reading of the book will surely lay a solid foundation for further research on fuzzy set theory and its applications.

Conferences and Call for Papers

Conference reports

FLINS 2008 (<http://www.mat.ucm.es/congresos/flins2008>)

The 8th International FLINS Conference on Computational Intelligence in Decision and Control was successfully held at the Faculty of Mathematics, Complutense University, in Madrid, Spain from 21-24 September 2008. It was sponsored by the Government of Spain, Complutense University of Madrid, SCK-CEN, the University of Ghent, Technical University of Madrid and the Institute for Interdisciplinary Mathematics of Madrid (IMI). From more than 300 submitted papers, a standard peer review process led to close to 200 accepted papers in the FLINS2008 conference proceedings. A total of 200 participants from 30 countries attended FLINS2008. Seven invited talks were given by Profs. Lotfi A Zadeh, Witold Pedrycz, Piero Bonissone, Enric Trillas, Luis Magdalena, Pierre D'hondt and Andrea Murari. It is worth noticing that the excellent talk of prof. L.A. Zadeh is now downloadable from the conference web site. FLINS2008 met a suggesting mixture between industry and academic researchers, counting with a relevant presence of students, who take advantage of partial discounts or grants. The conference was organized on a simultaneous three-parallel sessions scheme, making a total of 27 parallel sessions in three conference days, plus two poster sessions. The conference was preceded by a group visit to the city of Toledo, an old mixture of cultures, followed by a reception cocktail. Attendants enjoyed also a gala dinner with a typical Spanish "flamenco" show. Together with the conference documentation, each attendant received a hard copy of the World Scientific conference proceedings (to be included in ISI proceedings index as previous FLINS conferences), together with an electronic version. In addition to a best poster award conquest, several FLINS appreciation awards were given to all invited speakers and some key members who greatly supported FLINS activities. Moreover, a number of special issues in SCI journals will be devoted to extended versions of FLINS2008 papers, subject to another regular referee process. A special issue of the International Journal of Computational Intelligence Systems will be specifically dedicated to all those key FLINS2008 researchers that participated in the interesting and life discussion on Soft Computing that took part during the sessions.

D. Ruan (FLINS2008 general chair) and J. Montero (FLINS2008 organization chair)

Upcoming EUSFLAT Conference

- 13th IFSA World Congress and 6th EUSFLAT Conference, Lisbon, Portugal, July 20-24, 2009.
<http://www.eusflat2009.org/>

Upcoming EUSFLAT-Endorsed Events

- 10th International Student Conference on Applied Mathematics and Informatics (ISCAMI 2009), Malenovice, Czech Republic, May 13-15, 2009.
<http://irafm.osu.cz/ISCAMI/>
- 5th International Summer School on Aggregation Operators (AGOP 2009), Palma de Mallorca, Spain, July 6-10, 2009.
<http://agop2009.uib.es/>
- 4th International Symposium on Advances in Artificial Intelligence and Applications (AAIA'09), Mragowo, Poland, October 12-14, 2009.
<http://www.imcsit.org/pg/193/157>
- French Days on Fuzzy Logic and Applications (LFA 2009), Annecy, France, November 5-6, 2009.
<http://www.polytech.univ-savoie.fr/lfa2009>
- International Conference on Modeling Decisions for Artificial Intelligence (MDAI 2009), Awaji Island, Japan, November 30 - December 2, 2009.
<http://www.mdai.cat/mdai2009/>
- 9th International Conference on Intelligent Systems Design and Applications (ISDA'09), Pisa, Italy, November 30-December 2, 2009.
<http://cig.iet.unipi.it/isda09/>
- 4th International Workshop on Genetic and Evolutionary Fuzzy Systems (GEFS 2010), Mieres, Spain, March 17-19, 2010.
<http://www.softcomputing.es/gefs2010/>

Other Events

- **28th International Conference of the North American Fuzzy Information Processing Society (NAFIPS 2009)**, Cincinnati, OH, USA, June 14-17, 2009.
<http://nafips2009.ewu.edu/>
- **International Work-Conference on the Interplay between Natural and Artificial Computation (IWINAC 2009)**, Santiago de Compostela, Spain, June 22-26, 2009.
<http://www.iwinac.uned.es/iwinac2009/>
- **17th Annual International Conference on Intelligent Systems in Molecular Biology & 8th European Conference in Computational Biology (ISMB/ECCB 2009)**, Stockholm, Sweden, June 27 - July 2, 2009.
<http://www.iscb.org/ismbeccb2009/index.php>
- **10th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty**, Verona, Italy, July 1-3, 2009.
<http://www.isib.cnr.it/ecsgaru2009/>
- **2009 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE2009)**, Jeju Island, Korea, August 20-24, 2009.
<http://www.fuzz-ieee2009.org/>
- **2009 Salford Data Mining Conference (SALFORD 2009)**, San Diego, CA, USA, August 23-25, 2009.
<http://salforddatamining.com/>
- **International Conference on Neural Computation (ICNC 2009)**, Madeira, Portugal, October 5-8, 2009.
<http://www.icnc.ijcci.org/>

EUSFLAT Board

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