

Sergio Guadarrama's Curriculum Vitae

“Juan de la Cierva” Researcher
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EDUCATION

- 2007 Ph.D. *suma cum laude*, Computer Science and Artificial Intelligence, Technical University of Madrid, Spain.
- 2002 M.Sc. *cum laude*, Computer Science and Artificial Intelligence, Technical University of Madrid, Spain.
- 2000 B.Sc. Computer Science, Technical University of Madrid, Spain.

ACADEMIC AND RESEARCH EXPERIENCE

- 2008-Pres “Juan de la Cierva” Researcher, European Centre for Soft Computing, Mieres, Spain.
- 2009-Pres Lecturer, Master in Soft Computing and Intelligent Data Analysis, European Centre for Soft Computing and University of Oviedo, Mieres, Spain.
- 2007-2008 Postdoctoral Researcher, European Centre for Soft Computing, Mieres, Spain.
- 2006-2007 Lecturer, European Master in Computational Logic at Technical University of Madrid, Spain.
- 2006-2007 Lecturer, Artificial Intelligence Department, Technical University of Madrid, Spain.
- 2005-2006 Graduate Student Instructor, Artificial Intelligence Department, Technical University of Madrid, Spain.
- 2004-2005 Graduate Student Instructor, Computer Science Department, University Rey Juan Carlos, Mostoles, Spain.
- 2003-2004 Visiting Student Researcher, Electrical Engineering and Computer Science Department, University of California, Berkeley, CA.
- 2000-2004 Graduate Research Fellow, Artificial Intelligence Department, Technical University of Madrid, Spain.
Advisor: Prof. Enric Trillas.
- 2000 Graduate Research Assistant, Intelligent Systems Lab, Technical University of Madrid, Spain.
Supervisor: Prof. Ana Garcia Serrano.

AWARDS, FELLOWSHIPS AND HONORS

- 2008 Received the “Juan de la Cierva” grant in Computer Science by the Spanish Department of Science and Innovation.
- 2008 Received the “Best Doctoral Dissertation Award of 2006-2007” in Computer Science by the Technical University of Madrid, (the Computer Science School is ranked number 1 in Spain).
- 2004 Received a grant from the Doctoral Mentoring Program AAMAS 2004 to attend the Agent and Multi-Agent Systems Conference in New York, Jul. 2004.
- 2003 Received scholarship from the Spanish Education Department to conduct research at the University of California, Berkeley, Aug. 2003 to Jun. 2004.
- 2003 Received a grant from the AgentCities project funded by the European Union to attend the Fifth European Agent Systems Spring School 2003 and the AgentCities information day iD3.
- 2001 Received a Ph.D. Fellowship from the Spanish Education Department, under the supervision of the Prof. Enric Trillas, 2001 to 2004.

- 2000 Received a research grant from the Technical University of Madrid and the European Union to Work on the ADVICE project (Virtual Assistant for the Customer in Digital Markets), collaborating with Prof. Ana Garcia-Serrano, Nov. 2000 to Apr. 2001.

PH.D. THESIS

- “A contribution to Computing with Words/Perceptions”, Advisor: Prof. Enric Trillas.
“Best Doctoral Dissertation Award of 2006-2007” in Computer Science by the Technical University of Madrid.
(Available online at: <http://oa.upm.es/448/>)

MAJOR RESEARCH GRANT RECEIVED

- ◇ “Smart Bees: Learning Language in a semi-supervised environments”, PI: Sergio Guadarrama, (JCI-2008-3531). Nov. 2008 to Nov. 2011, (Principal Researcher). Funded by Spanish Department of Science and Innovation and the European Social Fund under program Juan de la Cierva

RESEARCH PROJECTS PARTICIPATION

- ◇ “SCAIWEB: Systems to access Web information based on Soft-Computing”. PI: Jose Angel Olivas (PAC06-0059). May 2006 to Dec. 2008, (Research Member). Funded by the Castilla la Mancha Regional Government.
- ◇ “Soft Computing Techniques for Computing with Words, oriented to Perceiving Systems”. PI: Julio Gutierrez-Rios (TIN2005-08943-C02-01) Nov. 2005 to Oct. 2008, (Research Member). Funded by the Spanish Department of Science and Innovation.
- ◇ “Network about Soft Computing and its technological and business applications (RESCATE)”. PI: Jose L. Verdegay (TIN2005-24790-E), Jan. 2006 to Dec. 2008, (Research Member). Funded by the Spanish Department of Science and Innovation.
- ◇ “BeMySearch: Concept-based Search Engine for Multimedia” PIs: Masoud Nikravesh and Tomohiro Takagi. (Graduate Student Researcher).
- ◇ “Hardware/Software Environment for the design and development of high performance applications of the fuzzy logic” (TIC2000-1420), Dec. 2001 to Jun. 2004, (Graduate Student Researcher). Funded by the Spanish Department of Science and Innovation.
- ◇ “Design of new models for fuzzy rule systems”. PI: Julio Gutierrez-Rios (PB98-1379-C02-02), Sep. 2000 to Dec. 2002, (Graduate Student Researcher). Funded by the Spanish Department of Science and Innovation.
- ◇ “ADVICE - Virtual Assistant for the Customer in Digital Markets”. PI: Ana Garcia-Serrano (IST-1999-11305). V Program Marco of European Union. Nov. 2000 to Apr. 2001, (Graduate Student Researcher). Funded by the European Union.

ACADEMIC SERVICE

- ◇ Organizer of the Special Session on Computing with Words, Actions and Perceptions in the IFSA/EUSFLAT 2009 Conference.
- ◇ Member of the Task force in Computing with Words at Computational Intelligence Society (IEEE) since 2007.
- ◇ Member of IEEE and of IEEE Computational Intelligence Society.
- ◇ Member of the Organizing Committee of the XIV Spanish Conference of Fuzzy Technology and Fuzzy Logic ESTYLF 2008.
- ◇ Organizer of the 2nd International Summer Course on Soft Computing: Intelligent Data Analysis in the European Centre for Soft Computing.

- ◇ Ph.D. Committee membership: "Elements for analysis of software engineering methods based on their complexity and uncertainty"^c Nelson Medinilla, Advisor: Xavier Ferré.
- ◇ Serving as reviewer for the following journals: Fuzzy Sets and Systems, Information Sciences, International Journal of Approximate Reasoning, Computational Statistics and Data Analysis and IEEE Transactions on Fuzzy Systems.

INVITED TALKS

1. "On Computing with Words, Actions and Perceptions (CW-AP)", BISC Seminar at the University of California, Berkeley, Sep. 2008.
2. "Computational tools for the analysis of fuzzy concepts", Computing with Words and Perceptions Seminar at the European Centre for Soft Computing, Jul. 2008.
3. "Three topics within Computing with Words, Actions and Perceptions (CW-AP)", European Centre for Soft Computing, May 2008.
4. "Wash-machines, water-cleaner and helicopters", Cajastur and Science at Cultural Center of Cajastur, Apr. 2008.
5. "Soft Computing for Information Retrieval in the Web", 2005 EUSFLAT-LFA Conference, Sep. 2005.
6. "Conjecturing machines?", Spanish Science and Technology Museum, Apr. 2005.
7. "Intelligent search in Internet", Spanish Science and Technology Museum, Apr. 2002.

SELECTED PUBLICATIONS

International Journal Publications

1. "Fuzzy representations need a careful design", E. Trillas and S. Guadarrama, International Journal of General Systems (Accepted for publication).
2. "Crisp sets as classes of discontinuous fuzzy sets", E. Trillas, I. Garcia-Honrado, S. Guadarrama and E. Renedo, International Journal of Approximate Reasoning (Accepted for publication).
3. "What about fuzzy logic's linguistic soundness?", E. Trillas and S. Guadarrama, Fuzzy Sets and Systems 156 (3): 334-340, 2005.
4. "Fuzzy Prolog: a new approach using soft constraints propagation", S. Guadarrama, S. Munoz and C. Vaucheret, Fuzzy Sets and Systems 144 (1): 127-150, 2004.
5. "Multiple-valued logic and artificial intelligence fundamentals of fuzzy control revisited", C. Moraga, E. Trillas and S. Guadarrama, Artificial Intelligence Review 20 (3-4): 169-197, 2003.
6. "Model of Place-Sensor System for Self-Localization of an Autonomous Mobile Robot", G. Triviño, A. Ruiz, S. Guadarrama and R. Gari, Artificial Intelligence Research and Development 100: 123-136, JUN 2003
7. "A simple general implementation using CLP(R)", C. Vaucheret, S. Guadarrama and S. Munoz, Lecture Notes in Computer Science 2401: 469-469, 2002.
8. "Fuzzy Prolog: A simple general implementation using CLP(R)", C. Vaucheret, S. Guadarrama and S. Munoz, Lecture Notes in Artificial Intelligence 2514: 450-463, 2002.

Book Chapters

1. "On Computing Antonyms", E. Trillas, C. Moraga, S. Guadarrama, S. Cubillo and E. Castañeira, *Forging New Frontiers: Fuzzy Pioneers I*, Ed. M. Nikraves, L. Zadeh and J. Kacprzyk, 133-153, Springer, 2007.
2. "On Fuzzy Set Theories", A. Pradera, E. Trillas, S. Guadarrama and E. Renedo, *Fuzzy Logic*, Ed. P.P Wang and D. Ruan, 15-47, Volume 215, Springer, 2007.
3. "Fuzzy Sets vs Language", E. Trillas, E. Renedo and S. Guadarrama, *Computational Intelligence: Theory and Practice*, Ed. B. Reusch, 353-366, Springer September 2006.
4. "Some fuzzy counterparts of the language uses of And and Or", S. Guadarrama, E. Trillas and E. Renedo, *Computational Intelligence: Theory and Practice*, Ed. B. Reusch, 335-352, Springer September 2006.

5. "Fuzzy Thesauri for and from the WWW", M. De Cock, S. Guadarrama and M. Nikravesh, *Soft Computing for Information Processing and Analysis*, Ed. M. Nikravesh, L. Zadeh and J. Kacprzyk, 275-284, Vol 164, Springer, 2005.
6. "Evaluating Ontology Based Search Strategies", C. Loer, A. Singh, A. Cheung, S. Guadarrama and M. Nikravesh, *Soft Computing for Information Processing and Analysis*, Ed. M. Nikravesh, L. Zadeh and J. Kacprzyk, 189-202, Vol 164, Springer, 2005.
7. "A step towards conceptually improving Takagi-Sugeno's approximation", S. Guadarrama, E. Trillas, J. Gutierrez, et al., *Intelligent Systems for Information Processing: from Representation to Applications*, Ed. B. Bouchon-Meunier, L. Foulloy and R. R. Yager, 71-80, Elsevier, 2003.

International Conference Proceedings

1. "Computing with Actions: The case of driving a car in a simulated car race", S. Guadarrama, Accepted for the 2009 IFSA World Conference, ESFLAT Conference (IFSA-EUSFLAT'09), Lisbon, Portugal, Jul. 2009.
2. "Evaluating premises, partial consequences and partial hypotheses", I. García-Honrado, E. Trillas, S. Guadarrama and E. Renedo, Accepted for the 2009 IFSA World Conference, ESFLAT Conference (IFSA-EUSFLAT'09), Lisbon, Portugal, Jul. 2009.
3. "A new approach to fuzzy location of cephalometric landmarks in craniofacial superimposition", O. Ibáñez, O. Córdón, S. Damas, S. Guadarrama and José Santamaría, Accepted for the 2009 IFSA World Conference, ESFLAT Conference (IFSA-EUSFLAT'09), Lisbon, Portugal, Jul. 2009.
4. "Using Concept-Analyzer for comparing concepts", S. Guadarrama, Accepted for the 3rd Inter. Conf. on Semantic Computing (ICSC'09), Berkeley, USA, Sept. 2009.
5. "Concept-Analyzer: A tool for analyzing fuzzy concepts", S. Guadarrama and M. Garrido, Proceedings of the 2th Inter. Conf. on Information Processing and Management of Uncertainty Knowledge Based Systems (IPMU'08), 1084-1089, Torremolinos, Spain, Jun. 2008.
6. "Tuning a Fuzzy Racing Car by Coevolution", S. Guadarrama and R. Vazquez, Proceedings of the 3rd Inter. Workshop on Genetic and Evolving Fuzzy Systems (GEFS'08), 59-64, Witten-Bommerholz, Germany, Mar. 2008.
7. "Robust Gesture Recognition using Prediction-Error-Classification Approach", S. Guadarrama and G. Bailador, Proceedings of IEEE Conference on Fuzzy Systems 2007 (FUZZ-IEEE-07), 1775-1781, London, United Kingdom, Jul. 2007.
8. "A reflection on the use of And", S. Guadarrama and E. Renedo, Proceedings of the 4th Conference of the European Society for Fuzzy Logic and Technology (EUSFLAT 2005), 571-575, Barcelona, Spain, Sep. 2005.
9. "Fuzzy Consensus in Multi-Agent Systems", S. Guadarrama, Autonomous Agents and Multi-Agent System AAMAS-2004, Doctoral Mentoring Program of AAMAS, 5-6, New York, USA, Jul. 2004.
10. "Constructing Fuzzy Thesauri for the WWW: application to BeMySearch", M. De Cock, S. Guadarrama and M. Nikravesh, Proceedings of FLINT-CIBI 2003 50-55, 2003.
11. "A step towards conceptually improving Takagi-Sugeno's approximation", S. Guadarrama, E. Trillas, J. Gutierrez, et al., Proceedings of the 9th Inter. Conf. on Information Processing and Management of Uncertainty in Knowledge Based Systems (IPMU'02), 1789-1794, Annecy, France, Jul. 2002.

Other Publications (Submitted papers, Research Summaries and M.Sc. and Senior Thesis)

1. "A first inquiry on semantic-based models of And", S. Guadarrama, E. Renedo, E. Trillas and I. Garcia-Honrado Technical Report FSC-2009-9 European Centre for Soft-Computing, 2009 (Submitted to the IEEE Transactions of Fuzzy Systems).
2. "Approximate Robotic Mapping from sonar data by modeling Perceptions with Antonyms in Fuzzy Logic", S. Guadarrama and A. Ruiz-Mayor, Technical Report FSC-2008-14 European Centre for Soft-Computing, 2008 (Submitted to the Journal of Information Sciences).
3. "Smart-Bees: Learning Language in a semi-supervised environment", S. Guadarrama, 2008 ECSC Research Summary, European Centre for Soft-Computing, 2008.

4. "The Automatic Construction of Fuzzy Ontologies for Search in the WWW and The Use of Fuzzy Spiders for the Detection of Objects in Images", M. Nikravesh, T. Takagi, M. De Cock and S. Guadarrama, 2004 EECS Research Summary, Ed. California University, Berkeley, 135-139, 2004.
5. "Fuzzy Logic and Its Application to Multi-Agent and Consumer Profiling", M. Nikravesh, S. Guadarrama, S. Alptekin, et al, 2004 EECS Research Summary, Ed. California University, Berkeley, 98-100, 2004.
6. "ACiao: Agents in Ciao Prolog" and "Computing with Antonyms", S. Guadarrama, M.Sc. Thesis, Technical University of Madrid, October 2002.
7. "Imprecise Knowledge Representation: A partial review of Fuzzy Sets Theories" (In Spanish), S. Guadarrama, Senior Thesis, Technical University of Madrid, September 2000.

News articles

1. "Artificial Intelligence" (in Spanish) S. Guadarrama. Encyclopedia Espasa Calpe, extension of 2003
2. "An impossible machine: Charles Babagge (1791-1871)" (in Spanish). In *Some genius of computation. Short Bios* A.R. de Soto y E. Trillas Eds. Universidad de León 2006.

TEACHING EXPERIENCE

◇ Lecturer

- Models of Inexact Reasoning (in English) (Fall 2006, Spring 2007) (Student evaluation 4.9/5). Graduate course of the European Master in Computational Logic, Technical University of Madrid.
- Approximate reasoning (in English) (Fall 2006) (Student evaluation 4.8/5). Graduate course of the European Master in Computational Logic, Technical University of Madrid.
- Approximate Reasoning (in English) (Spring 2007) (Student evaluation 4.7/5). Graduate course of the Master in Artificial Intelligence, Technical University of Madrid.
- Models of Reasoning (in Spanish) (Fall 2006, Spring 2007) (Student evaluation 4.5/5). Upper division undergraduate course of the Artificial Intelligence Department, Technical University of Madrid.

◇ Graduate Student Instructor

- Logic Programming (in Spanish) (Spring 2005, Spring 2006) (Student evaluation 4.2/5). Upper division undergraduate course of the Artificial Intelligence Department, Technical University of Madrid (Supervisor Prof. Manuel Hermenegildo).
- Models of Reasoning (in Spanish) (Fall 2005, Spring 2006) (Student evaluation 4.4/5). Upper division undergraduate course of the Artificial Intelligence Department, Technical University of Madrid (Supervisor Prof. Enric Trillas).
- Fundamentals of Artificial Intelligence (in Spanish) (Spring 2005) (Student evaluation 4.3/5). Upper division undergraduate course of the Computer Science Department, University Rey Juan Carlos (Supervisor Dr. Holger Billhardt).
- Automata and Formal Languages (in Spanish) (Fall 2004, Spring 2005). (Student evaluation 3.4/5) Lower division undergraduate course of the Computer Science Department, University Rey Juan Carlos (Supervisor Dr. Holger Billhardt).
- Independent Research: Fuzzy Search Tools and Multi-Agent Systems (in English) (Fall 2003, Spring 2004) (Student evaluation 4.9/5). Upper division undergraduate course of the Computer Science Division, University of California, Berkeley (Supervisor Prof. L. Zadeh).

◇ Teaching Assistant

- Logic Models of Inexact Reasoning (in Spanish) (Fall 2002, Spring 2003).
- Approximate Reasoning (in Spanish) (Fall 2002, Spring 2003).

SUPERVISION OF STUDENTS RESEARCH PROJECTS

- ◇ Master Thesis, "Perceptions' Analyzer", 2007, Alvaro Pérez Álvarez, Advisors: Sergio Guadarrama and Nelson Medinilla.
- ◇ Senior Thesis Project, "XFSDL: An XML Fuzzy System Definition Language", 2007, Jose A. de los Frailes, Advisors: Sergio Guadarrama and Julio Gutierrez.
- ◇ Senior Thesis Project, "Concept-Analyzer: a fuzzy logic tool for concept analyzing", 2007, Marta Garrido, Advisor: Sergio Guadarrama.
- ◇ Independent Studies Project. "Fuzzy models in Bio informatics", Prerana Sharma, 2007, Advisor: Sergio Guadarrama.
- ◇ Independent Studies Project. "Multi Criteria Multi Objective Decision Making", Alper Tunga Gulbahar, 2004, Advisor: Sergio Guadarrama.
- ◇ Independent Studies Project. "BISC Fuzzy Search Tools", Chris Loer, 2004, Advisors: Sergio Guadarrama and Masoud Nikravesh.

FORMER ADVISEES

- ◇ Prerana Sharma (M.Sc. 2009), working in Siemens, Austria.
- ◇ Alvaro Pérez-Álvarez (M.Sc. 2008), pursuing Ph.D, Spain.
- ◇ Marta Garrido (B.Sc. 2007), working in Realtech, Spain.
- ◇ Jose A. de los Frailes (B.Sc. 2007), working in Fujitsu, Spain.
- ◇ Alper Tunga (M.Sc. 2007), working in Siemens, Turkey.
- ◇ Chris Loer (B.Sc. 2004), working in BigFix, USA.