Juan Antonio Navarro Pérez

Contact Information

Technische Universität München (TUM)
Institut für Informatik
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Interests

Program analysis and verification, automated reasoning, artificial intelligence. Formalization of mathematics. Networking systems, online social networks.

Research experience

Technische Universität München (TUM) 2010 – to date
Faculty of Computer Science
Chair for Foundations of Software Reliability and Theoretical Computer Science
Visiting researcher
Managing Professor: Andrey Rybalchenko

SNI: National System of Researchers in Mexico 2010 – to date
Member Level I.

Max Planck Institute for Software Systems (MPI-SWS) 2008 – 2009
Verification Systems Group
Postdoctoral research
Group leader: Andrey Rybalchenko

Education

The University of Manchester 2004 – 2007
Doctor of Philosophy in Computer Science
School of Computer Science — Formal Methods Group
Thesis: Encoding and Solving Problems in Effectively Propositional Logic
Supervisor: Andrei Voronkov

Universidad de las Américas, Puebla, México 2003 – 2005
Master in Computer Science
School of Engineering
Thesis: Semantics for nonmonotonic reasoning: A logical approach
Thesis advisor: Mauricio Osorio

Universidad de las Américas, Puebla, México 1999 – 2003
Bachelor in Mathematics
School of Science
Thesis: Lógica Aplicada a Answer Sets (Logic Applied to Answer Sets)
Thesis advisor: Mauricio Osorio

Publications

Journal papers

[1] Juan Antonio Navarro Pérez and Andrei Voronkov. Planning with effectively propositional logic. Collection of Papers Dedicated to Harald Ganzinger's Memory, 2008. To appear

[2] Mauricio Osorio, Juan Antonio Navarro Pérez, José Arrazola, and Verónica Borja Macías. Logics with common weak completions. *Journal of Logic and Computation*, 16(6):867–890, December 2006. [doi]

[3] Mauricio Osorio, Juan Antonio Navarro Pérez, José Arrazola, and Verónica Borja Macías. Ground nonmonotonic modal logic S5: New results. *Journal of Logic and Computation*, 15(5):787–813, October 2005. [doi]

[4] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. Safe beliefs for propositional theories. *Annals of Pure and Applied Logic*, 134(1):63–82, June 2005. [doi]

[5] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. Applications of intuitionistic logic in answer set programming. *Theory and Practice of Logic Programming*, 4(3):325–354, May 2004. [doi]

Conference papers

[6] Juan Antonio Navarro Pérez, Andrey Rybalchenko, and Atul Singh. Cardinality abstraction for declarative networking applications. In *CAV'09: Proceedings of the 21st International Conference on Computer Aided Verification*, volume 5643 of *Lecture Notes In Computer Science*, pages 584–598, Grenoble, France, June 2009. Springer. [doi]

[7] Juan Antonio Navarro Pérez and Andrey Rybalchenko. Operational semantics for declarative networking. In *PADL'09: Proceedings of the Eleventh International Symposium on Practical Aspects of Declarative Languages*, number 5418 in Lecture Notes in Computer Science, pages 76–90, Savannah, GA, USA, January 2009. Springer. [doi]

[8] Juan Antonio Navarro Pérez and Andrei Voronkov. Proof systems for effectively propositional logic. In *IJCAR'08: Proceedings of the 4th International Joint Conference on Automated Reasoning*, number 5195 in Lecture Notes in Computer Science, pages 426–440, Sydney, Australia, August 2008. Springer. [doi]

[9] Juan Antonio Navarro Pérez and Andrei Voronkov. Encodings of bounded LTL model checking in effectively propositional logic. In *CADE-21: Proceedings of the 21st International Conference on Automated Deduction*, number 4603 in Lecture Notes in Artificial Intelligence, pages 346–361, Bremen, Germany, 2007. Springer. [doi]

[10] Juan Antonio Navarro Pérez and Andrei Voronkov. Generation of hard non-clausal random satisfiability problems. In *AAAI'05/IAAI'05: Proceedings of the Twentieth National Conference on Artificial Intelligence and the Seventeenth Conference on Innovative Applications of Artificial Intelligence*, Pittsburgh, PA, USA, July 2005. AAAI Press

[11] Mauricio Osorio and Juan Antonio Navarro Pérez. Answer set programming and S4. In *IBERAMIA'04: Proceedings of the IX Ibero-American Conference*

on Artificial Intelligence, number 3315 in Lecture Notes in Computer Science, Puebla, México, November 2004. Springer. [doi]

[12] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. A logical approach for A-Prolog. In Ruy de Queiroz, Luiz Carlos Pereira, and Edward Hermann Haeusler, editors, *WoLLIC'02: Proceedings of the 9th Workshop on Logic, Language, Information and Computation*, volume 67 of *Electronic Notes in Theoretical Computer Science*, pages 265–275, Rio de Janeiro, Brazil, 2002. Elsevier. [doi]

[13] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. Equivalence in answer set programming. In Alberto Pettorossi, editor, *LOPSTR'01: Proceedings of the 11th International Workshop on Logic Based Program Synthesis and Transformation*, number 2372 in Lecture Notes in Computer Science, pages 57–75, Paphos, Cyprus, November 2001. Springer. [doi]

[14] Mauricio Osorio and Juan Antonio Navarro Pérez. Decision problem of substrings in context free languages. In Juan Humberto Sossa Azuela, Herbert Freeman, and C. Vizcaíno, editors, *CIC-X: Memorias del X Congreso Internacional de Computación*, pages 239–249. CIC-IPN, 2001

Workshop papers

[15] Meeyoung Cha, Juan Antonio Navarro Pérez, and Hamed Haddadi. Flash floods and ripples: The spread of media content through the blogoshpere. In *Proceedings of the ICWSM 2009 Data Challenge Workshop*, 2009. **Best paper award**

[16] Juan Antonio Navarro Pérez. Encodings of bounded LTL model checking in effectively propositional logic. In *ARW'07: Proceedings of the Workshop on Automated Reasoning*, London, U.K., April 2007

[17] Juan Antonio Navarro Pérez. Translations to propositional satisfiability. In *ARW'06: Proceedings of the Workshop on Automated Reasoning*, Bristol, U.K., April 2006

[18] Juan Antonio Navarro Pérez. Generation of hard non-clausal random satisfiability problems. In *ARW'05: Proceedings of the Workshop on Automated Reasoning*, Edinburgh, Scotland, July 2005

[19] Luis Angel Montiel and Juan Antonio Navarro Pérez. Computing preferred safe beliefs. In Mauricio Osorio and Alessandro Provetti, editors, *LA-NMR'04: Proceedings of the First Latin America Workshop on Non-Monotonic Reasoning*, number 92 in CEUR Workshop Proceedings, México, D.F., México, April 2004

[20] Juan Antonio Navarro Pérez. Properties of translations for logic programs. In Balder ten Cate, editor, *ESSLLI'03: Student Session of the Eighth European Summer School in Logic, Language and Information*, Vienna, Austria, August 2003

[21] Juan Antonio Navarro Pérez. Answer set programming through G_3 logic. In Malvina Nissim, editor, *ESSLLI'02: Student Session of the Seventh European Summer School in Logic, Language and Information*, Trento, Italy, August 2002

[22] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. Si-logics for non-monotonic reasoning. In *Proceedings of the Workshop on Logic and Com-*

putation, held at the Mexican International Conference on Artificial Intelligence (MICAI'02), Mérida, México, April 2002

Extended abstracts

[23] Juan Antonio Navarro Pérez and Andrei Voronkov. Encodings of problems in effectively propositional logic. In *SAT'07: Proceedings of the 10th International Conference on Theory and Applications of Satisfiability Testing*, number 4501 in Lecture Notes in Computer Science, page 3, Lisbon, Portugal, 2007. Springer. [doi]. Invited talk given by second author

[24] Mauricio Osorio and Juan Antonio Navarro Pérez. Modal logic $S5_2$ and FOUR (abstract). In *ASL'03: Proceedings of the 2003 Annual Meeting of the Association for Symbolic Logic*, Chicago, IL, USA, June 2003

[25] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. Debugging in A-Prolog: A logical approach (abstract). In Peter J. Stuckey, editor, *ICLP'02: Proceedings of the 18th International Conference on Logic Programming*, number 2401 in Lecture Notes in Computer Science, pages 482–483, Copenhagen, Denmark, August 2002. Springer. [doi]

[26] Mauricio Osorio, Juan Antonio Navarro Pérez, and José Arrazola. Consistent neg-extensions of superintuitionistic theories (abstract). In *LC'02: Proceedings of the 2002 Logic Colloquium*, Münster, Germany, August 2002

Theses

[27] Juan Antonio Navarro Pérez. *Encoding and Solving Problems in Effectively Propositional Logic*. PhD thesis, The University of Manchester, 2007

[28] Juan Antonio Navarro Pérez. Semantics for nonmonotonic reasoning: A logical approach. Master's thesis, Universidad de las Américas, Puebla, 2006

[29] Juan Antonio Navarro Pérez. Lógica aplicada a answer sets. Bachelor's thesis, Universidad de las Américas, Puebla, 2003

Talks

Operational Semantics for Declarative Networking

— PADL'09: Eleventh International Symposium on Practical Aspects of Declarative Languages, 2009

Encodings of bounded LTL model checking

— CADE-21: 21st International Conference on Automated Deduction, 2007

— MPI-SWS: Max Planck Institute for Software Systems, 2007

Computing preferred safe beliefs

— LA-NMR'04: First Latin American Workshop on Non-Monotonic Reasoning, 2004

Properties of translations for logic programs

— ESSLLI'03: Student Session of the Eight European Summer School in Logic, Language and Information, 2003

Answer set programming through G_3 logic

— ESSLLI'02: Student Session of the Seventh European Summer School in Logic, Language and Information, 2002

Equivalence in answer set programming

— LOPSTR'01: 11th International Workshop on Logic Based Program Synthesis and Transformation, 2001

Decision problem of substrings in context free languages

— CIC-X: X Congreso Internacional de Computación, 2001

Selected prizes and awards

Best score at the Master in Computer Science, Universidad de las Américas, Puebla. June 2006.

Magna Cum Laude distinction at the Master in Computer Science, Universidad de las Américas, Puebla. June 2006.

Scholarship to study a graduate degree at The University of Manchester awarded by the Mexican Council of Science and Technology (CONACYT). June 2005.

Honorable Mention at the International Collegiate Programming Contest, ACM World Finals. March 2004.

Third Place at the Java Challenge of the International Collegiate Programming Contest, ACM World Finals. March 2004.

1st Place at the México & Central América ACM Programming Contest. November 2003.

Best score at the Bachelor in Mathematics, Universidad de las Américas, Puebla. June 2003.

Magna Cum Laude distinction at the Bachelor in Mathematics, Universidad de las Américas, Puebla. June 2003.

Honorable Mention at the International Collegiate Programming Contest, ACM World Finals. March 2003.

1st Place at the México & Central América ACM Programming Contest. November 2002.

Member of the List of the Dean at the School of Science, Universidad de las Américas, in the periods of 2000–2001 and 2001–2002.

7th Place at the México & Central América ACM Programming Contest. November 1999.

First Place at the National Contest of the 12th Mexican Mathematics Olympiad. November 1998.

Second Place at the National Contest of the 11th Mexican Mathematics Olympiad. November 1997.

Professional Service

Thesis reviewer

— *Fundamentos Matemáticos de la Semántica P-estable en Programación Lógica.* Presented by José Luis Carballido to obtain the degree of Doctor in Mathematics. Benemérita Universidad Autónoma de Puebla, México. 2009

— *Sobre Algunas Clases Polinomiales de Satisfacibilidad Proposicional.*
Presented by José Inácio de Jesus Rodrigues to obtain the degree of Doctor in Mathematics.
Universidad de Sevilla, España. 2009

Program committee member

— LA-NMR, Latin American Workshop on Non-Monotonic Reasoning: 2006, 2007, 2008

— ENC, Mexican International Conference on Computer Science: 2008

— WoLLIC, Workshop in Logic, Language and Computation: 2006

Journal reviewer

— JAR, Journal of Automated Reasoning: 2008

— RIIA, Revista Iberoamericana de Inteligencia Artificial, Special issue on logic in Latinamerica: 2008

External reviewer for conferences

— VMCAI, Verification, Model Checking, and Abstract Interpretation: 2009

— LPAR, Logic Programming Artificial Intelligence and Reasoning: 2008

— MICAI, Mexican International Conference on Artificial Intelligence: 2008

— ASP, Answer Set Programming: Advances in Theory and Implementation: 2007

— MICAI, Mexican International Conference on Artificial Intelligence: 2007

— CADE, Conference on Automated Deduction: 2007

Technical editor

— Proceedings of the 7th International Conference on Parametric Optimization and Related Topics, 2002

Volunteer work

— Organizer of the 6th Conference Cycle in Physics and Mathematics; and the 1st Conference Mini-cycle for lectures given by students. February 2002.

— Member of the Physics and Mathematics Student Society and member of the Student Union of Universidad de las Américas (CEUDLA). Period 2001–2002.

— Trainer of the teams representing the state of Puebla at the National Contests of the Mexican Mathematics Olympiad in 1999 and 2000.

— Occasional judge, problem submitter and evaluator for regional and national ACM Programming Contests in Mexico.

— As part of my social service, while studying as undergraduate at Universidad de las Américas, one of my activities was to give talks to students in Cholula and Puebla in order to promote the study of science.

Skills and competences

Languages: English, Spanish. Some knowledge of German.

Programming skills: Fluent in all major imperative programming languages (C/C++, Java, Pascal, Fortran), scripting and web languages (Perl, PHP, Python), as well as domain specific languages (Mathematica, R, Matlab). Experienced in logic and functional programming languages (Prolog, Haskell). Expert in the LaTeX typesetting system. Very good knowledge of standard UNIX tools, regular expressions, etc. Good experience with web technologies (HTML, CSS, XML). Ability to easily learn new languages and technologies.

General interests: Programming, mathematics, science and technology. Promotion of science.