

Curriculum Vitae

Sergio Roa

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Personal information

Date and Place of birth: October 30th, 1976 in Bogotá

Marital status: Single

Nationality: Colombian

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Professional profile

Computer Scientist at DFKI with experience in software development and research in Artificial Intelligence, Neuroinformatics, Machine Learning, Natural Language Processing and Cognitive Robotics.

Degrees

2006-2007. M.Sc. Applied Computer Science, Albert Ludwigs University of Freiburg. Specialization: Artificial Intelligence and Robotics. Minor subjects: Computational Linguistics and Cognitive Science. Master thesis: "Learning Bayesian Networks for Inference of Semantic Verb Classes" (in collaboration with Saarland University). Grade: 2.0 (Good).

1995-2002. Computer Systems Engineer, National University of Colombia at Bogotá
Final project: "Clasificación de Frases del Lenguaje Natural usando Redes Neuronales Recurrentes" (Classification of Natural Language Sentences using Recurrent Neural Networks).

Additional education

2009 - present. PhD student in Computer Science at Saarland University. PhD topic: Autonomous learning of object behavior models and concepts through robotic interaction.

November 2010. CoTeSys-ROS Fall School on Cognition-enabled Mobile Manipulation. Organizers: Technical University of Munich, Willow Garage, Inc. Munich, Germany.

March 2009. CogX EU project spring school. Institution: KTH Royal Institute of Technology, Stockholm, Sweden.

November 2006 - September 2007. Guest student at Saarland University.

August 2006. ESSLLI european summer school in logic, language and computation.
Institution: University of Málaga, Spain.

Oct. 2004 - Feb. 2006. Attending old Masters programm in Applied Computer Science. University of Freiburg.

Feb. 2004 - June 2004. Graduate courses in mathematics (linear algebra, algebraic structures and topology).
Institution: National University of Colombia, Faculty of Sciences.

July 2002. Monte Carlo Markov Chain Simulation. Extension Course.
Institution: National University of Colombia, Faculty of Sciences, Department of Mathematics.

August 2001. Machine Learning Extension Course.
Institution: National University of Colombia, Faculty of Engineering.

Experience

January 2008 - present. Institution: DFKI GmbH.

Junior researcher in interactive machine learning for Robotics. Supported by EU-funded CogX project. Tasks: development and co-development of machine learning libraries (NeuralGas, CrySSMEX, RNNLIB) and integration with robotic manipulation and vision systems, mainly in C++. Additional tasks: B.Sc. thesis advisement.

February 2004 - June 2004. Institution: National University, Dept. of Computer Systems Engineering. Graduate teaching assistantship. Taught courses: data structures and computer programming.

August 2002 - December 2003. Institution: Symbiosis Group.

Tasks: Software development in the area of character recognition using machine learning techniques, specifically co-development of a number plate recognition system, written in C++.

September - October 2001. Institution: Dept. of Mathematics, National University.

Tasks: Servers, firewall, software, operating systems configuration.

August 1999 - January 2000. Institution: Health ministry.

Tasks: Y2K Technical support. Billing systems software development.

1999. Institution: Dept. of Computer Systems Eng., National University.

Tasks: Undergraduate teaching assistantship, collaborating in the artificial intelligence laboratory.

Professional activities

July 2003. Web development using Java and Tomcat.

2002 - 2003. Consultations about the use of scientific computing tools.

Extracurricular activities

2012. Reviewer of International Journal on Artificial Intelligence Tools (IJAIT).

2010 - 2012. Member of the Special Track Committee on Data Mining at the International FLAIRS Conference.

2004. Reviewer of Special Issue of International Journal on Pattern Recognition and AI (IJPRAI).

2004 - 2007. Member of the Special Track Committee on Neural Network Applications at the International FLAIRS Conference.

2000 - 2002. Free software technologies support and promotion. Seminars organization and talks presentation about free and open source software. Member and co-founder of the GNU/Linux users group Lugunar and member of the community of free software users in Colombia (Colibrí).

Publications

Papers at Refereed Conferences

Roa, S. and Kruijff, G-J. Offline and active gradient-based learning strategies in a pushing scenario. European Conference on AI (ECAI 2010) International Workshop on Evolutionary and Reinforcement Learning for Autonomous Robot Systems (ERLARS 2010), Lisbon, Portugal, 2010.

Roa, S. and Kruijff, G-J. On the automatic Entropy-based construction of Probabilistic Automata in a Learning Robotic Scenario. Robotics: Science & Systems (RSS 2010) Workshop: Towards Closing the Loop: Active Learning for Robotics, Zaragoza, Spain, 2010.

Roa, S. and Kruijff, G-J. Long Short-Term Memory for Affordances Learning. International Conference on Epigenetic Robotics (EPIROB 2009), Venice, Italy, 2009.

Roa, S., Kruijff, G-J. and Jacobsson, H. Curiosity-Driven Acquisition of Sensorimotor Concepts using Memory-Based Active Learning. IEEE International Conference on Robotics and Biomimetics (ROBIO 2008), Bangkok, Thailand, 2008.

- Roa, S., Kordoni, V. and Zhang, Y. Mapping between Compositional Semantic Representations and Lexical Semantic Resources: Towards Accurate Deep Semantic Parsing. 46th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies (ACL HLT 2008), Short Papers, Columbus OH, USA, 2008.
- Roa, S., Bennewitz, M. and Behnke, S. Fundamental Frequency Estimation Based on Pitch-scaled Harmonic Filtering. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2007), Honolulu HI, USA, 2007.
- Roa, S. and Nino, F. Classification of Natural Language Sentences using Neural Networks. Proceedings of the Florida Artificial Intelligence Research Society International Conference (FLAIRS 2003). St. Augustine. FL, USA. AAAI Press. May, 2003.
- Calderón, A., Roa, S. and Victorino, J. Handwritten Digit Recognition using Convolutional Neural Networks and Gabor filters. International Congress on Computational Intelligence (ICCI 2003). Medellín, Colombia. November, 2003.
- Roa, S. y Niño, L. Clasificación de Frases del Lenguaje Natural. International Congress on Computational Intelligence (ICCI 2001). Medellín, Colombia. August, 2001.

Honors

2007. Invitation to accept PhD fellowship in Language Technology at the University of Oslo (Norway), Dept. of Informatics. Declined to accept research job at DFKI.
2002. Meritorious mention for the Computer Engineering final project.

Memberships

- IEEE (Institute of Electrical and Electronics Engineers) for 13 years.
- ACM (Association for Computing Machinery) for 11 years.
- ACL (Association for Computational Linguistics) for 3 years.

Natural Languages

- Spanish. Mother tongue.
- German. Fluent (oral, written, read).
- English. Fluent (oral, written, read).
- French. Basic proficiency (oral, written, read).

Technical skills

- Operating systems. UNIX (Linux, MacOS, Solaris, IRIX), Windows.
- Languages. C++, Java, Python, C, LaTeX, Html, XML, Perl, Haskell, Lisp, Prolog, i.a.
- Libraries. STL, Qt, Boost, OpenGL, Tomcat, LAPACK, LEDA, Bash, Weka, i.a.
- Applications. Subversion, Git, Emacs, Matlab, Scilab, Maxima, i.a.

Hobbies and Interests

- Salsa dancing, flute playing.
- Sports: Football, table tennis, biking, trekking.
- Reading (political, economical and scientific stuff).
- Social media, open contents.

References

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