

João Luís Garcia Rosa

Curriculum Vitae

CONTACT INFORMATION Department of Computer Science (SCC-ICMC)
University of São Paulo (USP) at São Carlos
São Carlos - São Paulo - Brazil

Voice: +55-16-3373-8170
Fax: +55-16-3373-9751
joaoluis@icmc.usp.br

<http://www.icmc.usp.br/~joaoluis>

RESEARCH INTERESTS Natural language processing, semantic processing, artificial neural networks, biologically plausible connectionist models.

EDUCATION **State University of Campinas - Unicamp**, Campinas, São Paulo, Brazil

Dr., Computational Linguistics, June 1999

- Thesis Title: “A Symbolic-connectionist Hybrid System for Thematic Role Processing” (*in Portuguese*)
- Advisor: Edson Françaço
- Co-advisor: Márcio Luiz de Andrade Netto
- Examination Committee: Márcia Maria Caçado Lima (UFMG), Fernando Antonio Campos Gomide (FEEC-Unicamp), Plínio Almeida Barbosa (IEL-Unicamp), Eleonora Cavalcante Albano (IEL-Unicamp)

M.S., Electrical Engineering, Artificial Intelligence, September 1993

- Dissertation Title: “Neural Networks and Formal Logic in Natural Language Processing” (*in Portuguese*)
- Advisor: Márcio Luiz de Andrade Netto
- Examination Committee: Edson Françaço (IEL-Unicamp), Fernando Antonio Campos Gomide (FEEC-Unicamp)

Graduation, Electrical Engineering, Electronics and Automation, December 1983

ACADEMIC EXPERIENCE **University of São Paulo (USP) at São Carlos - Department of Computer Science (ICMC)**, São Carlos, São Paulo, Brazil

Instructor and Researcher

August, 2008 - present

Taught graduate level courses for Computer Sciences and Computer Engineering: **Theory of Computation and Formal Languages, Theory of Computation and Compilers, Artificial Intelligence, Advanced Algorithms, and Programming Languages and Data Structures**. Research and advising.

Taught postgraduate level courses on Computer Sciences and Computational Mathematics: **Theory of Computation** discipline. Research and advising.

Pontifical Catholic University of Campinas - PUC-Campinas, Campinas, São Paulo, Brazil

Instructor and Researcher

September, 1987 - July, 2008

Taught graduate level courses for Computer Engineering and System Analysis: **Algorithms and Computer Programming, Artificial Intelligence, Formal Languages and Automata**, and **Data Structures** disciplines. Research and advising.

Taught postgraduate level courses for Masters level on Computing Systems: **Intelligent Systems, Artificial Neural Networks**, and **Natural Language Processing** disciplines. Research and advising.

Catholic University of Santos - UniSantos, Santos, São Paulo, Brazil

Instructor and Researcher

March, 2000 - December, 2003

Taught postgraduate level courses for Masters level on Informatics: **Information Technology - Artificial Intelligence, Intelligent Systems, Artificial Intelligence Applied to Education, Artificial Neural Networks** disciplines. Research and advising.

State University of Campinas - Unicamp, Campinas, São Paulo, Brazil

Graduate Student

August, 1981 - July, 1983

Scientific Initiation Program in Biomedical Engineering projects.

RESEARCH
PROJECTS

Current Research Project: “Use of Machine Learning Techniques and Computational Linguistics to Text Treatment.”

Previous projects: “Study of Lexical Semantic Representation and Ontologies to Textual Information Retrieval through Machine Learning Techniques,” “Study and Implementation of New Algorithms of Symbolic Rule Insertion and Extraction in Biologically Plausible Connectionist Architectures,” “Implementation of Biologically Plausible Symbolic-Connectionist Hybrid Systems for Natural Language Processing,” “Study and Implementation of Biologically Plausible Connectionist Algorithms and Architectures for Natural Language Processing,” “Technological Support for Software Development Collaborative Learning.”

PUBLICATIONS

Rosa, J. L. G. (2010), *Linguagens Formais e Autômatos* (Formal Languages and Automata), book in Portuguese, Editora LTC, GEN - Grupo Editorial Nacional, Rio de Janeiro, Brazil, ISBN 9788521617518, 166 pages.

Rosa, J. L. G. (2010), “Biologically Plausible Connectionist Prediction of Natural Language Thematic Relations,” *Proceedings of the WCCI 2010 - 2010 IEEE World Congress on Computational Intelligence, IJCNN 2010 - International Joint Conference on Neural Networks*, July 18-23, 2010. Centre de Convencions Internacional de Barcelona, Barcelona, Spain. IEEE Conference Proceedings, pp. 1127–1134.

Silva, J. F. and **Rosa, J. L. G. (2010)**, “CRT-ML - Coreference Resolution Tool through Machine Learning,” Demonstration paper, *Proceedings of PROPOR 2010 - International Conference on Computational Processing of Portuguese Language*, 27 to 30 of April, Porto Alegre - RS, Brazil. ISSN: 2177-3580.

Rosa, J. L. G. (2010), Review on “Text-to-speech synthesis” Taylor P., Cambridge University Press, New York, NY, 2009. 626 pp. Type: Book. http://www.reviews.com/review/review_review.cfm?review_id=137759. Date Reviewed: Feb 26 2010.

Rosa, J. L. G. (2009), Review on “Why are wordnets important?” Vincze V., Szarvas G., Csirik J. European computing conference (Proc. of the 2nd European Computing Conference, Malta, Sep 11-13, 2008) 316-322. 2008. Type: Proceedings. http://www.reviews.com/review/review_review.cfm?review_id=137273. Date Reviewed: Sep 3 2009.

Rosa, J. L. G. (2009), Review on “A linguistically motivated model for speed and pausing in animations of American sign language,” Huenerfauth M. ACM Transactions on Accessible Computing (TACCESS) 2: (2): 1-31, 2009. Type: Article. <http://www.reviews.com/index.cfm>. Date Reviewed: Sep 1 2009.

Rosa, J. L. G. (2009), A Hybrid Symbolic-Connectionist Processor of Natural Language Semantic Relations, *Proceedings of the 2009 IEEE Workshop on Hybrid Intelligent Models and Applications (HIMA2009), IEEE Symposium Series on Computational Intelligence, IEEE SSCI 2009*, March 30 - April 2, 2009. Sheraton Music City Hotel, Nashville, TN, USA, pp. 64–71. IEEE Conference Proceedings.

Schneider, M. O. and **Rosa, J. L. G. (2009)**, Application and Development of Biologically Plausible Neural Networks in a Multiagent Artificial Life System. **Neural Computing & Applications**, vol. 18, number 1, pp. 65-75. DOI 10.1007/s00521-007-0156-0.

Orrú, T., **Rosa, J. L. G.**, and Andrade Netto, M. L. (2008), SABio: A Biologically Plausible Connectionist Approach to Automatic Text Summarization. **Applied Artificial Intelligence**, Vol 22, nro. 9, pp. 896–920. Taylor & Francis. ISSN 0883-9514.

Silva, A. B. and **Rosa, J. L. G. (2008)**, Biological Plausibility in Artificial Neural Networks: An Improvement on Earlier Models, *Proceedings of The Seventh International Conference on Machine Learning and Applications (ICMLA'08)*, 11-13 Dec. 2008, San Diego, California, USA. IEEE Computer Society Press, pp. 829–834.

Schneider, M. O. and **Rosa, J. L. G. (2007)**, A Neurogenetic Framework for Problem Solution Applied to a Game Situation, in *Anais do VI Simpósio Brasileiro de Jogos para Computador e Entretenimento Digital (SBGAMES 2007)*. November, 7-9, 2007. São Leopoldo - RS, Brazil.

Marin, A., Adán-Coello, J. M., **Rosa, J. L. G.**, Tobar, C. M., and Freitas, R. L. (2007), Personalized Web page filtering using a Hopfield neural network. In J. Marques de Sá et al. (Eds.): ICANN, Part II, LNCS 4669, pp. 417–424, 2007. The 17th Intl. Conf. on Artificial Neural Networks, ICANN 2007, September 9-13, Porto, Portugal. *Lecture Notes in Computer Science*. DOI 10.1007/978-3-540-74695-9_43.

Rosa, J. L. G. (2007), A Connectionist Thematic Grid Predictor for Pre-parsed Natural Language Sentences, in D. Liu, S. Fei, Z. Hou, H. Zhang, and C. Sun (Eds.), *Advances in Neural Networks - ISNN2007 - Lecture Notes in Computer Science*, Volume 4492, Part II, pp. 825-834. Springer-Verlag Berlin Heidelberg, 2007. Fourth Intl. Symposium on Neural Networks, Nanjing, China, June 3-7, 2007, Proc. DOI 10.1007/978-3-540-72393-6_99.

Adán Coello, J. M.; Tobar Toledo, C. M.; **Rosa, J. L. G.**; and Freitas, R. L. (2007), Towards the Educational Semantic Web (Chapter VII), in F. M. Mendes Neto and F. V. Brasileiro (Eds.), *Advances in Computer-Supported Learning*, pp. 145-172. Information Science Publishing. Idea Group Inc.

Silva, A. B. and **Rosa, J. L. G. (2006)**, A Connectionist Model based on Physiological Properties of the Neuron, in Proc. of the Intl. Joint Conf. IBERAMIA/SBIA/SBRN 2006 - 1st Workshop on Computational Intelligence (WCI'2006), Ribeirão Preto, Brazil, October 23-28, 2006. CD-ROM. ISBN 85-87837-11-7.

Orrú, T.; **Rosa, J. L. G.**; Andrade Netto, M. L. (2006), SABio: An Automatic Portuguese Text Summarizer through Artificial Neural Networks in a more Biologically Plausible Model, in R. Vieira et al. (Eds.), LNAI 3960 - Computational Processing of the Portuguese Language - 7th. International Workshop, PROPOR 2006, *Lecture Notes in Computer Science*, volume 3960, pp. 11-20, Itatiaia, Brazil, May 2006 Proc. Publisher: Springer-Verlag.

Joaquim, P. C. E. and **Rosa, J. L. G. (2005)**, Artificial Neural Networks for Temporal Processing Applied to Prediction of Electric Energy Generation in Small Hydroelectric Power Stations, in *Proc. of the IJCNN 2005 - Intl. Joint Conf. on Neural Networks*, Montréal, Canada, July, 31-August, 04, 2005. pp. 2625-2630.

Schneider, M. O. and **Rosa, J. L. G. (2005)**, BIOANT - Biologically Plausible Computer Simulation of an Environment with Ants, in *Proc. of the IJCNN 2005 - Intl. Joint Conf. on Neural Networks*, Montréal, Canada, July, 31-August, 04, 2005. pp. 1505-1510.

Rosa, J. L. G. and Silva, A. B. (2004), Thematic Role Assignment through a Biologically Plausible Symbolic-connectionist Hybrid System, in *Proc. of the IJCNN 2004 - Intl. Joint Conf. on Neural Networks*, Vol. 2, pp. 1457-1462. Budapest, Hungary, July 25-29, 2004.

Rosa, J. L. G. (2004), A Biologically Motivated and Computationally Efficient Natural Language Processor, in *Lecture Notes in Computer Science*. Vol. 2972 / 2004. MICAI 2004: Advances in Artificial Intelligence: Third Mexican Intl. Conf. on Artificial Intelligence, Mexico City, Mexico, April 26-30, 2004. Proc., pp. 390-399. Springer-Verlag Heidelberg.

Rosa, J. L. G. (2003), A Biologically Plausible and Computationally Efficient Architecture and Algorithm for a Connectionist Natural Language Processor, in *Proc. of the 2003 IEEE Intl. Conf. on Systems, Man, and Cybernetics - IEEE-SMC'03*. 05-08 October, 2003. Washington, D.C., USA, pp. 2845-2850.

Schneider, M. O. and **Rosa, J. L. G. (2003)**, Neural Labyrinth Robot - Finding the Best Way in a Connectionist Fashion, *IV Encontro Nacional de Inteligência Artificial (ENIA)*, Anais do XXIII Congresso da Sociedade Brasileira de Computação - Campinas, São Paulo, Brazil, August 2-8, 2003. pp. 1751-1760.

Schneider, M. O. and **Rosa, J. L. G. (2003)**, BIOANT - A Biologically Plausible Approach to an Insect Simulation, *Intl. Conf. on Bioinformatics and Computational Biology (IcoBiCoBi'03)*, Ribeirão Preto, SP - Brazil, May 14-16.

Rosa, J. L. G. (2002), A Biologically Inspired Connectionist System for Natural Language Processing, in *Proc. of the 2002 VII Brazilian Symposium on Neural Networks (SBRN 2002)*. November 11-14, 2002. Recife, Brazil. IEEE Computer Society Press, pp. 243-248.

Schneider, M. O. and **Rosa, J. L. G. (2002)**, Neural Connect 4 - A Connectionist Approach to the Game, in *Proc. of the 2002 VII Brazilian Symposium on Neural Networks (SBRN 2002)*. November 11-14, 2002. Recife, Brazil. IEEE Computer Society Press, pp. 236-241.

Rosa, J. L. G. (2002), Next Word Prediction in a Connectionist Distributed Representation System, in *Proc. of the 2002 IEEE Intl. Conf. on Systems, Man, and Cybernetics - IEEE-SMC'02* - Vol. 3. October 06-09, 2002. Hammamet, Tunisia.

Rosa, J. L. G. (2002), A Biologically Motivated Connectionist System for Predicting the Next Word in Natural Language Sentences, in *Proc. of the 2002 IEEE Intl. Conf. on Systems, Man, and Cybernetics - IEEE-SMC'02* - Vol. 4. October 06-09, 2002. Hammamet, Tunisia.

Rosa, J. L. G. (2001), HTRP II: Learning thematic relations from semantically sound sentences, in *Proc. of the 2001 IEEE Intl. Conf. on Systems, Man, and Cybernetics - SMC2001*, October 7-10, 2001, Tucson, Arizona, USA, pp. 488-493.

Rosa, J. L. G. (2001), An Artificial Neural Network Model Based on Neuroscience: Looking Closely at the Brain, in V. Kůrková, N. C. Steele, R. Neruda, and M. Kárný (Eds.), *Artificial Neural Nets and Genetic Algorithms* - Proc. of the Intl. Conf. in Prague, Czech Republic, 2001 - ICANNGA-2001. April 22-25, 2001. Springer-Verlag, pp. 138-141.

Tobar Toledo, C. M.; **Rosa, J. L. G.**; Adán Coello, J. M.; Pannain, R. (2001), A Collaborative Environment Architecture for Programming Learning (*in Portuguese*), in *Anais do XII SBIE-2001 - Simpósio Brasileiro de Informática na Educação*, November, 21-23, 2001, Vitória, ES, Brazil, 244-252.

Rosa, J. L. G. and Françoço, E. (2000), Linguistic Relations Encoding in a Symbolic-Connectionist Hybrid Natural Language Processor, in M. C. Monard and J. S. Sichman (Eds.), *Lecture Notes in Computer Science* - Vol. 1952 / 2000, Advances in Artificial Intelligence, Proc. of IBERAMIA-SBIA 2000, Atibaia, São Paulo, Brazil, November 19-22, 2000, pp. 259-268, Springer-Verlag Heidelberg.

Rosa, J. L. G. and Françoço, E. (1999), Hybrid Thematic Role Processor: Symbolic Linguistic Relations Revised by Connectionist Learning, in *Proc. of IJCAI'99 - 16th. Intl. Joint Conf. on Artificial Intelligence*, Stockholm, Sweden, July 31-August 6, 1999. Vol. 2, pp. 852-857.

Rosa, J. L. G. (1998), The Word Meaning in Natural Language Processing (*in Portuguese*), **Estudos Lingüísticos** XXVII, UNESP-IBILCE, São José do Rio Preto, SP, Brazil, June, 807-812.

Rosa, J. L. G. and Françoço, E. (1998), A Biologically Fine-grained Artificial Neural Network: Towards a Hybrid Model, *Proc. of the IASTED Intl. Conf. on Artificial Intelligence and Soft Computing*, May 27-30, Cancún, Mexico, 302-305.

Rosa, J. L. G. (1997), A Thematic Connectionist Approach to Portuguese Language Processing, *Proc. of the IASTED Intl. Conf. on Artificial Intelligence and Soft Computing*, July 27-August 1, Banff, Canada, 240-243.

Rosa, J. L. G. (1997), Parser: A Syntactic and Semantic Analyser for Portuguese Sentences (*in Portuguese*), **Estudos Lingüísticos** XXVI, Campinas, Brazil, 352-357.

PROGRAM
COMMITTEE
MEMBER,
ORGANIZATION
COMMITTEE
MEMBER, AND AD
HOC REVIEWER

- Program committee member of *III International Workshop on Web and Text Intelligence* (WTI - 2010), São Bernardo do Campo - São Paulo, Brazil, October 23-29 2010.
- Member of *COGNITIVE 2010 Technical Program Committee - The Second International Conference on Advanced Cognitive Technologies and Applications* - COGNITIVE 2010. November 21-26, 2010 - Lisbon, Portugal.
- Reviewer of *IJCNN - Intl. Joint Conf. on Neural Networks 2010*, Barcelona, Spain, 18 a 23 de julho de 2010.
- Reviewer of *ACM Computing Reviews*, since June, 2009.
- Program committee member of the 7th. *Brazilian Symposium in Information and Human Language Technology* (STIL 2009), September 7-11, 2009. ICMC-USP/São Carlos, Brazil.
- Organization committee member of 1st. *Brazilian Olympiad of Computational Linguistics* (I OLinCom). The 7th. *Brazilian Symposium in Information and Human Language Technology* (STIL 2009), September 7-11, 2009. ICMC-USP/São Carlos, Brazil.
- Organization committee member of 1st. *Workshop in Scientific Initiation in Information and Human Language Technology* (I TILic). The 7th. *Brazilian Symposium in Information and Human Language Technology* (STIL 2009), September 7-11, 2009. ICMC-USP/São Carlos, Brazil.
- Program committee member of the *2nd International Workshop on Web and Text Intelligence*. *Brazilian Symposium in Information and Human Language Technology* (STIL 2009), September 7-11, 2009. ICMC-USP/São Carlos, Brazil.

- Academic committee member of *Interaction'09 - South America - 1st*. Regional Conference of IxDA - Interaction Design Association. November 27-28, 2009. São Paulo, SP, Brazil.
- Reviewer of the *IJCNN - Intl. Joint Conf. on Neural Networks 2009*, Atlanta, GA, USA, June 14-19, 2009.
- Reviewer of journal *Soft Computing*, Springer, November 2008.
- Reviewer of journal *Neural Networks*, Elsevier Science, February 2008.
- Program committee member and reviewer of the 17th. *Intl. Conf. on Artificial Neural Networks - ICANN 2007*, Porto, Portugal, September 9-13, 2007.
- Reviewer of the *IJCNN - Intl. Joint Conf. on Neural Networks 2007*, Orlando, FL, USA, August 12-17, 2007.
- Reviewer of *IEEE-Latin America Transactions*, 2006.
- Reviewer of I Workshop on Computational Intelligence (WCI), Ribeirão Preto, SP, Brazil, 2006.
- Reviewer of *Brazilian Symposium on Neural Networks - SBRN2004*, São Luiz, MA, Brazil, 2004.
- Referee of *Artificial Intelligence - An International Journal*, Elsevier Science, November 1999.

TUTORIAL
PRESENTED

A two-hour tutorial entitled “Biologically Plausible Artificial Neural Networks,” presented at *IJCNN 2005 - Intl. Joint Conf. on Neural Networks*, Montréal, Canada, on July, 31st., 2005. Available at <http://ewh.ieee.org/cmte/cis/mtsc/ieeecis/contributors.htm>.

DISSERTATIONS
ADVISED

- Alberione Braz da Silva, “Spiking Response Model and Control: Biological Plausibility through Neuron Signaling,” October 2006.
- Télvio Orrú, “SABIO: Supervised Connectionist Approach to Text Automatic Summarization,” August 2005 (co-advisor).
- Paulo César Endo Joaquim, “Neural Networks for Temporal Processing Applied to Predication of Electric Energy Generation in Small Hydroelectric Power Stations,” May 2005.
- Marvin Oliver Schneider, “BIOANT: A Biologically Plausible Connectionist Computational Simulation of an Environment with Ants,” December 2003.

SUBJECTS
STUDIED

Language Studies Institute - University of Campinas (Unicamp), São Paulo, Brazil

Topics in Psycholinguistics March - June, 1998 (45 hours)
Instructor: Prof. Dr. Edson Françaço.

Language and Cognitive Processes August - December, 1997 (45 hours)
Instructor: Prof. Dr. Edson Françaço.

Topics in Grammatical Theory I August - December, 1995 (45 hours)
Instructor: Prof. Dr. Mary A. Kato.

Phonetics and Phonology March - July, 1995 (60 hours)
Instructor: Prof. Dr. Angel Corbera.

Topics in Semantics II March - July, 1995 (45 hours)
Instructors: Prof. Dr. Rodolfo Ilari and Edson Françaço.

Topics in Semantics I September - December, 1994 (45 hours)
Instructors: Prof. Dr. Rodolfo Ilari and Edson Françaço.

Introduction to Syntax March - August, 1994 (45 hours)
Instructor: Prof. Dr. Carlos Franchi.

Psycholinguistics August - December, 1993 (45 hours)
Instructor: Prof. Dr. Edson Françaço.

Seminar in Linguistics I (Artificial Intelligence and Connectionism) July, 1991 (16 hours)
Invited instructor: Prof. Dr. Yorick Wilks (University of New Mexico, USA).

Computer Institute - University of Campinas (Unicamp), São Paulo, Brazil

Natural Language Processing August - December, 1993 (60 hours)
Instructors: Prof. Dr. Ariádne M. B. R. Carvalho and Jacques Wainer.

School of Electrical and Computer Engineering - University of Campinas (Unicamp), São Paulo, Brazil

Introduction to Intelligent Agent Theory August - December, 1999 (30 hours)
Instructor: Prof. Dr. Ricardo Ribeiro Gudwin.

Fuzzy Systems March - June, 1993 (30 hours)
Instructor: Prof. Dr. Fernando Gomide.

Knowledge Engineering I August - November, 1991 (45 hours)
Instructors: Prof. Dr. Secundino Soares Filho and Hermano de M. F. Tavares.

General Topics in Electrical Engineering I (Logic) March - July, 1991 (45 hours)
Instructor: Prof. Dr. Rafael dos Santos.

Neural Networks August - December, 1990 (45 hours)
Instructor: Prof. Dr. Márcio Luiz de Andrade Netto.

Topics in Neural Networks August - December, 1990 (45 hours)
Instructor: Prof. Dr. Armando Freitas da Rocha.

Organization and Structure of Computers March - July, 1990 (45 hours)
Instructor: Prof. Dr. Clésio Tozzi.

Techniques of Software Project March - July, 1990 (45 hours)
Instructor: Prof. Dr. Beatriz Daltrini.

Computer Networks in Industrial Automation I March - July, 1989 (45 hours)
Instructor: Prof. Dr. Manuel de Jesus Mendes.

PROFESSIONAL
EXPERIENCE

STC Telecomunicações Ltda., Campinas, São Paulo, Brazil
Software developer March, 1988 - March, 1990
Telephone exchange development. Operation, Maintenance, and Supervision.

Daruma Tecnologia em Eletrônica e Teleinformática, Campinas, São Paulo, Brazil
Software developer February, 1987 - March, 1988
Telephone call meter development.

Centro de Pesquisa e Desenvolvimento da Telebrás - CPqD, Campinas, São Paulo, Brazil
Software developer August, 1984 - February, 1987
Telex exchange software development.

Telemática Sistemas Inteligentes Ltda., São Paulo, São Paulo, Brazil
Hardware and Software developer December, 1983 - July, 1984
Electronic gate entrance through magnetic card project, developed for 1984 FIA Formula One World Championship - Brazilian Grand Prix.

LANGUAGES

English, Portuguese, French (reading), Spanish (reading), German (reading).

November, 2010.