Samuel Xavier de Souza, Ph.D.
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Personal Information

Status:	Married, two children
Date of Birth:	4th November 1976
Nationalities:	Belgian, Brazilian

Professional History

- **Post-doctoral researcher**. July 2007 - present
  Team: SCD/SISTA — Dept. of Electrical Engineering, K.U.Leuven, Belgium
  ◦ *Preparing undergoing project proposals for research funding agencies*
  ◦ *Establishing national and international partnerships through industrial cooperation projects*
  ◦ *Teaching problem-solving skills to undergraduate students*
  ◦ *Collaborating with professors, postdocs and Ph.D. students.*

- **Research assistant**. July 2002 - June 2007
  Team: SCD/SISTA — Dept. of Electrical Engineering, K.U.Leuven, Belgium
  ◦ *Researching & developing applications for Vision Systems on a Chip and novel robustness enhancement techniques*
  ◦ *Researching and developing new parallel optimization methods in C and Matlab*
  ◦ *Experimenting with these methods using ad-hoc TCP/IP distributed programs and High Performace Computing*
  ◦ *Supervising students of the Masters in Artificial Intelligence.*

- **Software engineer**. August 2001 - June 2002
  Team: D6/Advanced Design Technologies — IMEC vzw, Belgium
  ◦ *Developing a multi-processor simulator environment in C and system C to validate techniques for low-power, small memory footprint, and reduced code embedded applications*
  ◦ *Implementing an AMBA bus simulator for processor and memory network interconnections*
  ◦ *Integrating a power consumption model into existing single ARM processor emulators*
  ◦ *Integrating AMBA bus, power model and ARM emulators together into the final multi-processor simulator.*

- **Software specialist**. April 2001 - July 2001
  Team: Power Systems Stability — Research project between COSERN (Electricity Company) and Federal University of RN (UFRN), Brazil
  ◦ *Development of software for estimating the load of existing complex power systems.*

Education

- **Doctor in Engineering**, July 2003 - June 2007
  Faculty of Engineering, Katholieke Universiteit Leuven, Belgium
  Thesis: *Optimisation and Robustness of Cellular Neural Networks*
  Advisers: Joos Vandewalle, Ph.D. and Johan Suykens, Ph.D.

- **Pre-Doctoral Degree**, July 2002 - June 2003
  Dept. of Electrical Engineering, Katholieke Universiteit Leuven, Belgium
  Advisers: Joos Vandewalle, Ph.D. and Johan Suykens, Ph.D.
- **5-year Degree in Computer Engineering**, February 1996 - December 2000
  Dept. of Computation and Automation, Federal University of RN (UFRN), Brazil
  Thesis: *Distribution of patterns among Hopfield Networks in parallel using SOM algorithm*
  Advisers: Adrião D. Doria Neto, Ph.D. and José Alfredo F. Costa, D.Sc.
  Final Percentage Score: 78,3%
  Final Year Percentage Score: 87,2%
- **4-year Technical Degree in Electro-techniques**, February 1991 - July 1995
  Federal Technical School of RN, Brazil

Languages

- English: *Excellent*, worked for 6 years in an English-speaking environment, published several articles in English
- Dutch: *Very good*, taught classes to Flemish under-graduates in Dutch
- Portuguese: *Native speaker*
- Spanish: *Verbal skills*

Skills

Category	Expertise	Period
Programing languages	• C, C++: PC, DSP, and micro-controller programming	1997 - present
	• Several assembly languages	1997 - present
	• System C: modeling of a multi-processor simulator environment	2001 - 2002
	• Perl: productivity scripts for generation and analysis of data	2001 - present
	• Java: conventional and thread programming	1998 - 2001
	• Php: Web & database integration	1999 - 2000
Software libraries	• MPI, openMPI (use and admin.)	2006 - present
	• Unix shared memory communication	2001 - 2002
	• TCP/IP socket communication	2000 - 2005
	• Posix Inter Process Communication	2000 - 2005
Technologies, standards, & tools	• Subversion, Doxygen	2006 - present
	• Matlab	1997 - present
	• ISO-OSI model, TCP/IP Architecture	1998 - 2000
	• AMBA and CAN busses	2000 - 2002
Other	• Use and admin. of several Linux distributions	1999 - present
	• Windows NT, 2000, XP	1996 - present
	• LaTeX	1999 - present
	• MS Office, OpenOffice	1996 - present
	• CorelDraw	1997 - 2000

Interests

- Linux and open source
- Technology news and trends
- Biking, basketball and football
- Traveling with friends.

Scientific Publications

Ph.D. thesis:

- **XAVIER DE SOUZA S.**, **Optimisation and Robustness of Cellular Neural Networks**, PhD thesis, Faculty of Engineering, K.U.Leuven (Leuven, Belgium), Jun. 2007, 229 p.

Journal papers:

- **XAVIER DE SOUZA S.**, SUYKENS J.A.K., VANDEWALLE J., BOLLÉ D., **Coupled Simulated Annealing**, Submitted for publication, Nov. 2007
- **XAVIER DE SOUZA S.**, SUYKENS J.A.K., VANDEWALLE J. **Learning of Spatiotemporal Behavior in Cellular Neural Networks**,*International Journal of Circuit Theory and Applications — Special Issue on CNN Technology (Part 1)*, Vol. 34, Jan. 2006, pp. 127-140
- **XAVIER DE SOUZA S.**, YALÇIN M.E., SUYKENS J.A.K., VANDEWALLE J. **Toward CNN Chip-Specific Robustness**, in *IEEE Trans. Circuits and Systems I:Regular Papers — Special issue on CNN Technology and Active Wave Computing*, Vol. 51, No. 5, May 2004, pp. 892-902
- MARCHAL, P., JAYAPALA, M., **XAVIER DE SOUZA, S.**, YANG, P., CATTHOOR, F., and DECONINCK G. **Matador: An Exploration Environment for System-Design**, in *Journal of Circuits, Systems and Computers*, Vol. 11, No. 5, 2002, pp. 503-535

Conference papers:

- **XAVIER DE SOUZA S.**, SUYKENS J.A.K., VANDEWALLE J., BOLLE D., **Cooperative Behavior in Coupled Simulated Annealing Processes with Variance Control**, in Proc. of the International Symposium on Nonlinear Theory and its Applications (NOLTA2006) , Bologna, Italy, Sept. 2006, pp. 879-882
- HILLIER D., **XAVIER DE SOUZA S.**, SUYKENS J.A.K., VANDEWALLE J., **CNNOPT : Learning dynamics and CNN chip-specific robustness**, in Proc. of the 10th IEEE International Workshop on Cellular Neural Networks and their applications (CNNA2006), Istanbul, Turkey, Aug. 2006, pp. 114-119

- **XAVIER DE SOUZA S.**, VAN DYCK M., SUYKENS J.A.K., VANDEWALLE J., **Fast and Robust Face Tracking for CNN chips: application to wheelchair driving**, in Proc. of the 10th IEEE International Workshop on Cellular Neural Networks and their Applications (CNNA2006), Istanbul, Turkey, Aug. 2006, pp. 200-205

- **XAVIER DE SOUZA S.**, SUYKENS J.A.K., VANDEWALLE J. **Learning wave phenomena on the CNN universal machine**, in *Proc. of the 2005 International Symposium on Nonlinear Theory and its Applications (NOLTA'05)*, Bruges, Belgium, Oct. 2005

- **XAVIER DE SOUZA S.**, SUYKENS J.A.K., VANDEWALLE J. **Real-Time Tracking Algorithm with Locking on a given Object for VLSI CNN-UM implementations**, in *Proc. of IEEE Int. Workshop on Cellular Neural Networks and their Applications (CNNA'04)*, Budapest, Hungary, 2004, pp. 291-296

- **XAVIER DE SOUZA S.**, YALÇIN M.E., SUYKENS J.A.K., VANDEWALLE J. **Automatic chip-specific CNN template optimization using adaptive simulated Annealing**, in *Proc. of 16th European Conference on Circuit Theory and Design (ECCTD'03)*, Krakow, Poland, Vol II, 2003, pp. 329-332

- **SOUZA, S.X.**, DÓRIA NETO, A.D., COSTA, J.F., ANDRADE NETO, M.L. **A Neural Hybrid System for Large Memory Association**, in *Proc. of IEEE International Joint Conference on Neural Networks (IJCNN'01)*, Washington DC, USA, Vol. 2, July 2001, pp. 1174-1179

- **SOUZA, S.X.**, DÓRIA NETO, A.D., BEZERRA, J.B., MELO, J.D. **Parallel Architecture for Hopfield Neural Networks**, in *Proc. of IEEE International Conference on Engineering and Computer Education (ICECE2000)*, São Paulo, Brazil, 2000

- **SOUZA, S.X.**, DORIA NETO, A.D., BEZERRA, J.B., MELO, J.D. **A Parallel configuration for increasing storage capacity of Hopfield networks**, in *Proc. of XII Congresso Brasileiro de Automática (CBA2000)*, Florianópolis, Brazil, 2000 (In Portuguese)