



Born in Portugal, on March 4<sup>th</sup>, 1962.

IEEE Senior Member, ACM Member and member of the .

- Habilitation (Agregação) in Electrical and Computer Engineering and Computer Science, IST, Technical University of Lisbon (TU Lisbon), Portugal, December 2004.
- PhD in Electrical and Computer Engineering and Computer Science, IST, TU Lisbon, June 1996.
- MSc in Electrical and Computer Engineering, IST, TU Lisbon, Sept. 1989.
- *Licenciatura* (5 years) in Electronics and Telecommunications, Universidade de Aveiro, Portugal, July 1984.

**Faculty positions:** Associate Professor since 2006, Assistant Professor from 1996 to 2006, and Teaching Assistant from 1992 to 1996 in the Electrical and Computer Engineering Department at IST. Has had several coordinator tasks in the department, namely actually coordinates both the BSc and MSc programs in Electrical and Computer Engineering at IST (about 1500 students).

**Supervision and courses taught:** 4 PhD thesis already finished, one co-supervised with Prof. Stamatis Vassiliadis, and 13 MSc thesis, and he has taught the courses “Advanced Computer Architecture”, “High Performance Computing Architectures”, “Specialized Processors”, at the graduation level, and “Computer Electronics”, “Electronics Systems for Signal Processing” and “Electronics” at the undergraduate level.

**Research** interests include high performance and parallel computing, micro-architectures for general purpose and specialized processors, and multimedia systems. He has contributed with several papers in scientific journals and conferences, has participated and has been PI of national and European research projects. He has been invited to give talks and as speaker in universities, industry and conferences over the world, such as ADCOM 2009 in Bangalore, Technical University of Delft (2009), University Santiago Compostela (2008), University of Murcia (2008) and IBM Haifa Labs (2007).

#### **Professional Services**

Chair of the board of Directors of INESC-ID, since June of 2009, a research institute with more than 80 PhD researchers in the areas of Information and Communication Technologies, that is an associated laboratory. He has been member of this board of Directors from January 2004-December 2007.

Leader of the SiPS research group at Instituto de Engenharia de Sistemas e Computadores Investigação e Desenvolvimento em Lisboa (INESC-ID).

He has served as General-chair of ISPDC 2009 and HiPEAC WRC 2010, Program Chair of HeteroPar 2009 and Program Co-Chair of HiPEAC WRC 2009, he has been a member of the Steering Committee of ISPDC and member of the technical program committee of IPDPS (2003 and 2007), ICS 2006, ICPDAS

(2006 and 2008), SAMOS, and ICME, among others. Associate Editor of the EURASIP Journal on Embedded Systems.

### **Awards and Distinctions**

- Distinguished by the Technical University of Lisbon (UTL) with an honorable mention for the number and the impact of the publications in international scientific journals in the period 2004-2008 (award UTL/Santander Totta), 2009
- HiPEAC paper award for the paper *Compact and Flexible Microcoded Elliptic Curve Processor for Reconfigurable Devices* presented in the Symposium on Field-Programmable Custom Computing Machines (FCCM), 2009
- Distinguished by the Technical University of Lisbon (UTL) with an honorable mention for the number and the impact of the publications in international scientific journals in the period 2002-2006 (award UTL/Santander Totta), 2007
- Supervisor of the best Master Thesis in 2009 and Final Year Project in 2003, in Electrical, Computer Engineering and Informatics at IST, annual Award Prof. Luís Vidigal-5000 Euros.
- Elevated to Senior member of IEEE in 2004.
- Visiting Professor at the Computer Engineering Laboratory of the Delft University of Technology, spring semester 2002/03.

### **Research projects**

- He is member of Management Committee of the Open European Network for High Performance Computing on Complex Environments, 2009-2012
- He is member of the HiPEAC2 European Networks of Excellence, 2008-2012
- Has been member of the HiPEAC Networks of Excellence, 2005-2009
- He has been principal investigator of three national research projects funded by the Portuguese Foundation for Science and Technology (FCT), 2002-2005 and 2005-2008
- He led the INESC-ID participation in the European Project *Cortical Visual Neuroprosthesis for the Blind* (CORTIVIS), 2002-2006

### **Number of publications, impact and some selected recent publications**

Co-authored 1 book, 6 book chapters, 35 papers in journals and more than 100 in international conferences, with more than 400 citations on the Google Scholar. Some selected and recent publications.

- Frederico Pratas, Pedro Trancoso, Alexandros Stamatakis and Leonel Sousa. Fine-grain Parallelism using Multi-core, Cell/BE, and GPU Systems: Accelerating the Phylogenetic Likelihood Function, In International Conference on Parallel Processing (ICPP), IEEE Computer Society, September 2009.
- Gabriel Falcão, Vitor Silva and Leonel Sousa. How GPUs can outperform ASICs for fast LDPC decoding, In 23rd ACM International Conference on Supercomputing (ICS), June 2009.
- José Germano, Verónica Martins, Filipe Cardoso, Teresa Mendes de Almeida, Leonel Sousa, Paulo Freitas and Moises Simões Piedade. A Portable and Autonomous Magnetic Detection Platform for Biosensing, Sensors, Molecular Diversity Preservation International, pp. 1-19, May 2009.
- Samuel Antão, Ricardo Chaves and Leonel Sousa. Compact and Flexible Microcoded Elliptic Curve Processor for Reconfigurable Devices, In The 17th IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM), March 2009.
- João C. Martins and Leonel Sousa. Book: Bioelectronic Vision: Retina Models, Evaluation Metrics and System Design, Book of the Series on Bioengineering and Biomedical Engineering, Vol.3, World Scientific, March 2009.
- Gabriel Falcão, Vitor Silva, Leonel Sousa and José Marinho. High coded data rate and multicodeword WiMAX LDPC decoding on the Cell/BE, Electronics Letters, IET, vol. 44, n. 24, November 2008.

- Ricardo Chaves, Georgi Kuzmanov, Leonel Sousa and Stamatis Vassiliadis. Cost-Efficient SHA Hardware Accelerators, *IEEE Trans. Very Large Scale Integration Systems (TVLSI)*, vol. 16, n. 8, pp. 999-1008, August 2008.
- Frederico Pratas, B. Mladen, G. Gaydadjiev, Leonel Sousa and S. Kaxiras. Low Power Microarchitecture with Instruction Reuse, In *ACM Computing Frontiers*, Italy, May 2008.
- Pedro Tomás and Leonel Sousa. Statistical Analysis of a Spike Train Distance in Poisson Models, *IEEE Signal Processing Letters*, vol. 15, pp. 357-360, April 2008.
- Ricardo Chaves, Georgi Kuzmanov, Leonel Sousa and Stamatis Vassiliadis. Merged Computation for Whirlpool Hashing, In *Design, Automation and Test in Europe (DATE 08)*, pp. 1-4, Munich, Germany, March 2008.
- Gabriel Falcão, Leonel Sousa and Vitor Silva. Massive Parallel LDPC Decoding on GPU, In *13th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP 2008)*, February 2008.
- Ricardo Chaves and Leonel Sousa. Improving RNS multiplication with more balanced moduli sets and enhanced modular arithmetic structures, *Journal Computers & Digital Techniques, Institution of Engineering and Technology (IET)*, vol. 1, n. 5, pp. 472-480, September 2007
- Shinichi Yamagiwa and Leonel Sousa. Caravela: A Novel Environment for stream-based distributed computing, *IEEE Computer Magazine*, vol. 40, pp. 76-83, May 2007.
- Shinichi Yamagiwa and Leonel Sousa. Design and implementation of a stream-based distributed computing platform using graphics processing units, In *ACM International Conference on Computing Frontiers*, pp. 197-204, Italy, May 2007.
- Leonel Sousa. Efficient Method for Magnitude Comparison in RNS based on Two Pairs of Conjugate Moduli, In *IEEE International Symposium on Computer Arithmetic (ARITH18)*, June 2007.
- Ricardo Chaves, Georgi Kuzmanov, Leonel Sousa and Stamatis Vassiliadis. Improving SHA-2 Hardware Implementations, In *Workshop on Cryptographic Hardware and Embedded Systems (CHES)*, Springer, pp. 298-310, October 2006.
- Oliver Sinnen, Leonel Sousa and Frode Eika Sandnes. Towards a Realistic Task Scheduling Model, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 17, n. 3, pp. 263-275, March 2006.
- Leonel Sousa and Ricardo Chaves. A Universal Architecture for Designing Efficient Modulo  $2^{n+1}$  Multipliers, *IEEE Transactions on Circuits and Systems-I: Regular Papers (TCAS-I)*, vol. 52, n. 6, pp. 1166- 1178, June 2005.
- Oliver Sinnen and Leonel Sousa. Communication Contention in Task Scheduling, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 16, n. 6, pp. 503-515, June 2005.
- Leonel Sousa and Oliver Sinnen. On Task Scheduling Accuracy: Evaluation Methodology and Results, *The Journal of Supercomputing*, Kluwer Academic Publishers, n. 27, pp. 177-194, February 2004.
- Oliver Sinnen and Leonel Sousa. Extension for Contention Awareness and Evaluation of Node Priorities for Heterogeneous Cluster Architectures, *Parallel - Computing*, Elsevier, vol. 30, n. 1, pp. 81-101, January 2004.
- Nuno Roma and Leonel Sousa. Automatic Synthesis of Motion Estimation Processors Based on a New Class of Hardware Architectures, *Journal of VLSI Signal Processing-Systems for Signal, Image, and Video Technology*, Kluwer, vol. 34, n. 3, pp. 277--290, July 2003.
- Nuno Roma and Leonel Sousa. Efficient and Configurable Full Search Block Matching Processors, *IEEE Transactions on Circuits and Systems for Video Technology*, IEEE, vol. 12, n. 12, pp. 1160-1167, December 2002.
- Leonel Sousa. A General Method for Eliminating Redundant Computations in Video Coding, *Electronics Letters*, pp. 306-307, February 2000.