**Sérgio Miguel Fernandes**  Sergio.Fernandes@tecnico.ulisboa.pt
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# *Curriculum Vitae*

## Personal Data

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| Full Name: | Sérgio Miguel Martinho Fernandes |
| Residence: | Lisbon (PORTUGAL) |
| E-mail: | Sergio.Fernandes@tecnico.ulisboa.pt |
| Telephone: | (+351) 213 100 263 |
| Born: | June 1978 |
| Nationality: | Portuguese |

## Research Interests

- Transactional systems
- Software Transactional Memory
- Concurrent and parallel programming
- Web application development

## Academic Education

2014.    Ph.D. in Information Systems and Computer Engineering at Instituto Superior Técnico, University of Lisbon. Final average of the academic part: 5/5.

2006.    M.Sc. in Information Systems and Computer Engineering by Instituto Superior Técnico, Technical University of Lisbon. Final average of the academic part: 5/5.

2001.    B.Sc. in Information Systems and Computer Engineering, specialisation on Programming and Information Systems, by Instituto Superior Técnico, Technical University of Lisbon. Final average: 16/20.

1996.    High School graduation by Professor Herculano de Carvalho's High School. Final average: 18/20.

## Complementary Education

2009.    Workshop in "Techniques in Oral Communication and Public Presentations" for teachers and lecturers. Duration: 2 hours. Trainer: Maria Júlia Guerra.

2009.    Training "The Coaching Clinic". Duration: 2 days. Trainer: Susana Azevedo.

# Professional Activity

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| 2014–... | Assistant Professor at Instituto Superior Técnico's Department of Information Systems and Computer Science, University of Lisbon. Teaching: Object-Oriented Programming (2014/2015). |
| 2014–... | Researcher at INESC-ID's Software Engineering Group. |
| 2006–2014. | Lecturer at Instituto Superior Técnico's Department of Information Systems and Computer Science, Technical University of Lisbon. Teaching: Advanced Programming (2007/2008, 2011/2012, 2013/2014), Algorithms and Data Structures (2005/2006 to 2006/2007, 2013/2014), Analysis and Synthesis of Algorithms (2013/2014), Compilers (2006/2007, 2011/2012) , Object-Oriented Programming (2012/2013), and Software Engineering (2005/2006, 2007/2008). |
| 2000–2014. | Junior Researcher at INESC-ID's Software Engineering Group. |
| 2010–2013. | Participation as an INESC-ID researcher in the Cloud-TM project. European project number 257784 under programme FP7-ICT-2009-5 – Objective 1.2. |
| 2010–2012. | Participation as an INESC-ID researcher in the project RuLAM: Running Legacy Applications on Multicores. FCT project with reference PTDC/EIA-EIA/108240/2008. |
| 2008–2010. | Participation as an INESC-ID researcher in the project PASTRAMY: Persistent and highly Availabe Software TRansactional MemorY. FCT project with reference PTDC/EIA/72405/2006. |
| 2002–2006. | Trainee Lecturer at Instituto Superior Técnico's Department of Information Systems and Computer Science, Technical University of Lisbon. Teaching: Compilers (2002/2003, 2004/2005), Programming Engineering (2002/2003 to 2004/2005), and Software Engineering (2004/2005). |
| 2002–2004. | Participation as an INESC-ID researcher in the ESPRIT project ACE-GIS (Adaptable and Composable E-commerce and Geographic Information Services). European project number IST-2001-37724. |
| 2001–2002. | Teaching support to the Software Engineering course at Instituto Superior Técnico. |
| 2000–2002. | Participation as an INESC-ID researcher in the ESPRIT project COMBINE (COMponent-Based INteroperable Enterprise system development). European project number IST-1999-20893. |

# Publications

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| 2014. | **Sérgio Miguel Fernandes**. *Strongly Consistent Transactions for Enterprise Applications: Using Software Transactional Memory to Improve Consistency and Performance of Read-Dominated Workloads.* Ph.D. Thesis in Information Systems and Computer Engineering, Instituto Superior Técnico/Universidade de Lisboa, July 2014. |
| 2012. | Nuno Diegues, **Sérgio Miguel Fernandes** and João Cachopo. *Parallel nesting in a lock-free multi-version Software Transactional Memory.* In 7th ACM SIGPLAN Workshop on Transactional Computing (TRANSACT 2012), New Orleans, Louisiana, USA, February 2012. |

## Publications (continued)

2011. Jorge Martins, João Pereira, **Sérgio Miguel Fernandes** and João Cachopo. *Towards a simple programming model in Cloud Computing platforms.* In IEEE First Symposium on Network Cloud Computing and Applications (NCCA 2011), Toulouse, France, November 2011.

2011. **Sérgio Miguel Fernandes** and João Cachopo. *Strict Serializability is Harmless: A New Architecture for Enterprise Applications.* In SPLASH Wavefront 2011, Portland, Oregon, USA, October 2011.

2011. **Sérgio Miguel Fernandes** and João Cachopo. *A New Architecture for Enterprise Applications With Strong Transactional Semantics.* Technical Report INESC-ID 26/2011, Lisbon, May 2011.

2011. **Sérgio Miguel Fernandes** and João Cachopo. *Lock-free and scalable multi-version Software Transactional Memory.* In 16th ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming (PPoPP 2011), San Antonio, Texas, USA, February 2011.

2010. **Sérgio Miguel Fernandes** and João Cachopo. *A scalable and efficient commit algorithm for the JVSTM.* In 5th ACM SIGPLAN Workshop on Transactional Computing (TRANSACT 2010), Paris, France, April 2010. Published online: `http://www-ali.cs.umass.edu/∼moss/transact-2010/public-papers/24.pdf`.

2008. Miguel Pardal, **Sérgio Miguel Fernandes**, Jorge Martins and Joana Paulo Pardal. *Customizing Web Services with Extensions in the STEP framework.* In Web Services Research Foundation, International Journal of Web Services Practices — Vol 3, No 1.

2005. **Sérgio Miguel Fernandes**. *A Workflow Virtual Machine.* M.Sc. Thesis in Information Systems and Computer Engineering, Instituto Superior Técnico/Universidade Técnica de Lisboa. March 2006.

2004. **Sérgio Miguel Fernandes**, João Cachopo and António Rito Silva, *Supporting Evolution in Workflow Definition Languages.* In Proceedings of the 20th Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2004), Springer-Verlag, LNCS 2932. January 2004. Měřín, Czech Republic.

2001. **Sérgio Miguel Fernandes**. *Compositional Micro-Workflow Architecture to Support Business Processes.* Dissertation for the degree of BSc in Computer Science Engineering, Instituto Superior Técnico/Universidade Técnica de Lisboa.

2001. **Sérgio Miguel Fernandes** and Paulo Dias, *Business Tourist.* In Proceedings of the Workshop of Introduction to Autonomous Agents (WIAA 2001), Lisboa, Portugal.

## Management and Representativity

2007–2009  Member of the Senate of the Technical University of Lisbon.

2007–2009  Member of the Assembly of Representatives of the Technical University of Lisbon.

2007–2009  Representative of the Lecturers at the Council of the Departament of Information Systems and Computer Engineering.

## Reviewer

2011.   27th Annual ACM Symposium on Applied Computing (SAC 2012), Riva del Garda (Trento), Italy. March 26–30, 2012.

2010.   26th Annual ACM Symposium on Applied Computing (SAC 2011), Tunghai University, Taichung, Taiwan. March 21–24, 2011.

2008.   24th Annual ACM Symposium on Applied Computing (SAC 2009), Honolulu, Hawaii, USA. March 8–12, 2009.

2007.   23th Annual ACM Symposium on Applied Computing (SAC 2008), Fortaleza, Ceará, Brazil. March 16–20, 2008.

2006.   22th Annual ACM Symposium on Applied Computing (SAC 2007), Seoul, Korea. March 11–15, 2007.

2005.   21th Annual ACM Symposium on Applied Computing (SAC 2006), Dijon, France. April 23–27, 2006.

2004.   20th Annual ACM Symposium on Applied Computing (SAC 2005), Santa Fe, New Mexico. March 13–17, 2005.

2003.   19th Annual ACM Symposium on Applied Computing (SAC 2004), Nicosia, Cyprus. March 14–17, 2004.


## Software Development

2008–...   **Fénix Framework.**
Programming language: Java.
URL: http://fenix-framework.github.io/
I have been involved with the Fenix Framework from its inception. I was responsible for the design and initial implementation of version 2: This milestone represented a major overhaul of the framework, and it focused on supporting multiple data storages and transaction engines. This work was one of the core contributions of my Ph.D. thesis.

2010–2011.   **JVSTM (*Java Versioned Software Transactional Memory*).**
Programming language: Java.
URL: http://inesc-id-esw.github.io/jvstm/
I was responsible for the design and implementation of a new nonblocking commit algorithm to replace the original lock-based implementation. This resulted in the first entirely lock-free implementation of a multi-version Software Transactional Memory. I also developed a new algorithm for garbage collection of unreachable versions, which eliminated a performance bottleneck of the previous algorithm. This work was one of the core contributions of my Ph.D. thesis.

2002–2004.   **WorkSCo (*Workflow with Separation of Concerns*).**
Programming language: Java.
URL: http://worksco.sourceforge.net/
I was responsible for defining the framework's architecture and for the implementation of the system's core components. This work was a core contribution of my Master's thesis.

## Software Development (continued)

2002–2003.  **GesDis (Gestão de Disciplinas).**
Programming language: Java.
I contributed to the design of the original architecture and to the core implementation of the course management system (GesDis), which was, at the time, used by the students in the Software Engineering classes. This system was a pilot experiment and a precursor to the development of the FenixEdu platform (`http://fenixedu.org`).

## Languages

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| Portuguese. | Native proficiency. |
| English. | Professional working proficiency. |
| Spanish. | Reading and limited conversational skills. |
| French. | Reading and limited conversational skills. |

## Other Activities

2011.  PADI Advanced Open Water Diver and Enriched Air Diver (Nitrox) certifications.

2009.  PADI Open Water Diver certification.

2003–2007.  Systems administrator for INESC-ID's Software Engineering Group.

2005.  First Aid and CPR Course (N. 529/FOR/05) at the Portuguese Red Cross. Recertifications in 2008 and 2010.

2003.  Training session on CVS (*Concurrent Versions System*). Presented at INESC-ID after invitation from its Spoken Language Systems Lab.

2002.  Parachuting course (elementary level) at the Parachuting School of Aero-Clube de Évora. (Current number of jumps:12)

2000–2001.  Graduation project executed at INESC-ID's Software Engineering Group under the guidance of Professor António Rito da Silva, entitled *Compositional Workflow Architecture to Support Business Processes*. Final grade 17/20.

2000.  Performed a case study of TV Cabo Portugal's information systems and presented recommendations aiming towards systems' improvement. Case study performed in the context of the *Organisational Architecture of Enterprise Information Systems* course.

1996–...  Regular blood donor.

1994–1996.  Part of the Portuguese Informatics Association (API) organising committee for the 6th and 7th Informatics Olympics, which took place at Escola Sec. Prof. Herculano de Carvalho.

1993–1994.  Head of Informatics Club at Esc. Sec. Prof. Herculano de Carvalho.

September 2014