Curriculum vitæ
Rui Maranhão

July 4, 2019

Contents

# Rui Maranhão
Curriculum vitæ

1   Personal Information

- Abreu / Rui (full name: Lima Maranhão de Abreu / Rui Filipe)
- Rua Oliveira Barros 215 Hab2.1, 4400-235 V.N. de Gaia, Portugal
- Portuguese
- 14-08-1981
- Male
- Married, with 3 children
- +351 965 641 253
- https://www.ruimaranhao.com
- rui@computer.org
- @rmaranhao
- ruimaranhao

2   Education

🎓 **Habilitation in Computer Science and Engineering** Instituto Superior Técnico, University of Lisbon, Portugal; **April 2019**. Topic: *Measuring and Improving Software Fault Diagnosis*; Committee Members: A. Zeller, J. Monteiro, L. Caires, H. Madeira, A. Oliveira (president), and A. Porto.

Machine Learning Engineer Nanodegree Udacity; co-created by Kaggle; **July 2016–June 2017**.

Data Analyst Nanodegree Udacity, co-created by Facebook, MongoDB and Zipfian Academy; **December 2015–April 2016**.

🎓 **PhD in Computer Science** Delft University of Technology, The Netherlands; **August 2005–November 2009**. Thesis: *Spectrum-based Fault Localization of Embedded Software* ; Adviser: prof.dr.ir. A.J.C. van Gemund.

🎓 **Computer Science and Systems Engineering (MSc)** University of Minho, Portugal; **1999–2004**. Specialization in Information Technologies. **GPA**: 15 out of 20 (top 5%).

☞ **Software Technology Master Course** Utrecht University, the Netherlands; **September 2002 – February 2003**. Attended the following courses from the Software Technology Master course as Erasmus exchange student: Databases, 7 out of 10; Distributed Programming, 7.5 out of 10; Generic Programming, 8 out of 10; Introduction to Software Technology, 9 out of 10; Software Architecture, 10 out of 10.

☞ **Informatics Technician** Santa Maria Maior High School, Portugal; **1996 – 1999**. **GPA**: 17 out of 20 (best student).

3 Work Experience

☞ **Associate Professor (tenured, with Habilitation since April 2019)** Instituto Superior Técnico (IST), University of Lisbon, Portugal; **February 2017 – present**. Main activities and responsibilities: Conducting research in software engineering and artificial intelligence; Understanding and improving software development practice; Providing top education in software engineering.

☛ **Founder and Head of Engineering** DashDash GmbH, Porto and Berlin, Portugal and Germany; **January 2017 – May 2018**. Main activities and responsibilities: Leading and Managing the software engineering efforts. DevOps. (Being one of the founders, he holds an advisory position with DashDash).

☞ **Assistant Professor (tenured since January 2012)** Faculty of Engineering of University of Porto (FEUP), Portugal; **September 2009 – February 2017**. Main activities and responsibilities: Conducting research in software engineering and artificial intelligence; Understanding and improving software development practice; Providing top education in software engineering.

☛ **Member of Research Staff** Palo Alto Research Center (PARC), a Xerox Company - Intelligent Systems Lab., Palo Alto, USA; **July 2014 – December 2016**. Main activities and responsibilities: Devise and apply statistical and probabilistic techniques for testing and automatic fault localization of software intensive systems, as well as self-adapting to runtime failures. Applying these techniques to other domains such as healthcare-oriented software solutions (diagnostic and predictive solutions to outpatients using sensors) and HVAC systems. Reporting to Dr. Johan de Kleer.

☛ **Head of Engineering/Co-Founder** Crowbar, Porto, Portugal; **January 2014 – June 2014**. Main activities and responsibilities: Planning and owning the tech roadmap, ensuring completion on time and at a high standard.

☞ **Visiting Faculty Member** Institute of Software Research, Carnegie Mellon University, USA; **September 2010 – January 2011**. Main activities and responsibilities: Research and teaching. Collaboration with J. Aldrich and D. Garlan. Supported by the CMU|Portugal program.

☞ **Research Assistant** Delft University of Technology and Embedded Systems Institute, the Netherlands; **August 2005 – August 2009**. Main activities and responsibilities: Doctoral research on Fault Detection and Diagnosis in the context of embedded systems.

☛ **Guest Software Developer** NXP Semiconductors, the Netherlands; **May 2007 – May 2008**. Main activities and responsibilities: Software Quality Assurance by knowledge transfer of a software fault diagnosis method investigated in his doctoral research.

☛ **Research Trainee** Philips Research Laboratories, the Netherlands; **October 2004 – June 2005**. Main activities and responsibilities: Extended the Amber Tool (tool to analyze TV software) to support analysis in presence of function pointers.

☛ **Software-Developer Trainee** Siemens S.A., Portugal; **March 2004 – September 2004**. Main activities and responsibilities: Developed an ASN.1 Encoder/Decoder Generator for UMTS troubleshooting application. **Note**: This project was carried out in the context of his diploma thesis, and graded with **cum laude**.

4 Relevant Training

- 2-day Facebook Testing and Verification Symposium (FaceTAV), Facebook London, UK, November 2017 and 2018 (invitation only);

- 3-day intensive course on "Being a Manager, Leadership and Personality Types", Palo Alto Research Center, CA, USA September 2016;

- "It's hip to flip! Turning your class upside-down for learning", University of Porto, June 2016 (Instructor: Susan Zvacek, University of Denver);

- Facebook Machine Learning Open House Event, April 2014 and April 2015 (invitation only);

- 1-month Coursera course on "The Data Scientist's Toolbox", September 2014 (Instructors: Jeff Leek, Roger D. Peng, and Brian Caffo);

- 2-month Coursera course on "Principles of Reactive Programming", November 2013 (Instructors: Martin Odersky, Erik Meijer, and Roland Kuhn);

- 2-month Coursera course on "Functional Programming Principles in Scala", March 2013 (Instructor: Martin Odersky);

- 5-day Dagstuhl Seminar on Fault Prediction, Localization, and Repair, Dagstuhl, Germany, February 2013 (invitation only; Organizers: Mary Jean Harrold, Friedrich Steimann, Frank Tip, and Andreas Zeller; Website: http://goo.gl/vc6Cl);

- 1-day training on "How to Write a Business Plan", University of Porto's Business School, May 2013;

- 1-day training on "A Practical Introduction to CMMI© for Services" (Instructors: Eileen Forrester; Peter Leeson; Kieran Doyle), Software Engineering Institute, September 2012 (this certification allows to participate in CMMI Appraisals);

- 1-day Workshop "Pitch me UP: Efficient Communication of Business Ideas", University of Porto's Business School, May 2012;

- 3-day Workshop "Comunicação Institucional: a estratégia de relacionamento da FEUP com a imprensa" (Corporate Communication: The FEUP's strategy to deal with the media), April, 2010;

- "Turning Technology into Business", Delft University of Technology, November 2008 – January 2009;

- "Nederlands voor buitenlanders" (Dutch for Foreigners). Delft University of Technology, January 2006 – February 2008.

- Certificate of Proficiency in English (CPE), University of Cambridge, UK, December 2007;

- Attended the USI - CMU Summer School on Dependable Computer Systems, University of Lugano, Lugano, Switzerland, July 2007;

- Workshop on Presenting Scientific Research for Ph.D. Students, Delft University of Technology, April 2007.

5 Personal Skills and Competences

Mother tongue Portuguese

Other languages		Speaking	Reading	Writing
	English	▣	▣	▣
	Dutch	▣	▣	▣
	Spanish	▣	▣	▣
	French	▣	▣	▣
	Chinese (Mandarin)	▢	▢	▢

6 Honors and Awards

- Distinguished Paper Award at the The 27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE'19), Tallinn, Estonia, 2019.

- Best Paper Award at the XXI Ibero-American Conference on Software Engineering (CiBSE'18), Bogota, Colombia, 2018.

- "A Survey on Software Fault Localization" selected to be featured on ACM's 21st Annual Best of Computing (Notable Articles), June 2017.

- IEEE Senior Member, July 2016 (Senior Member is the highest grade for which IEEE members can apply; only 9% of its over 430,000 members have achieved senior grade)

- United States of America's O-1 Visa Status: Individuals with Extraordinary Ability or Achievement, January 2014–January 2017

- Appreciation Award for Significant Effort and Contribution to Winning DARPA TC's ADAPT, Palo Alto Research Center, Palo Alto, CA, USA, December 2015

- Two Best Paper Awards at the 25th International Workshop on Principles of Diagnosis (DX'14), Graz, Austria, 2014

- Faculty of Engineering of the University of Porto's Pedagogical Merit Award, January 2014

- Faculty of Engineering of the University of Porto's Research Merit Award, January 2014

- Second most cited article of the Journal of Systems and Software between 2009 and 2014 (article: *A practical evaluation of spectrum-based fault localization*), 2014.

- Co-author the foreword of the Proceedings of the 24th International Workshop on Principles of Diagnosis, 2013 (invited by the editors)

- Best Paper Award at the 8th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS'13), San Francisco, CA, USA, 2013

- Best Paper Award at the 8th Doctoral Symposium in Informatics Engineering (co-authored paper with PhD student), Porto, Portugal, 2013

- ACM Transactions on Software Engineering and Methodology's Distinguished Referee between 2011 and 2012

- Winner of the Best Business Ideas - Porto Region Universities with the "Remote Debugging Service" (organized by Portuguese TV broadcaster SIC Noticias; `http://goo.gl/7YtF5`), 2012

- Winner of the Latin-Iberian RedEmprendia's Venture Competition with "Remote Debugging Service" (out of 294 proposals, prize: € 10000), 2012

- Recipient of the ANETIE's Venture Competition with "Remote Debugging Service" (`http://www.anetie.pt/website.aspx?p=235`), 2012

- Best Paper Award at the 8th International Conference on Autonomic and Autonomous Systems (ICAS'12), Saint Maarten, Netherlands Antilles, 2012

- Second place in the University of Porto's Venture Competition with "Remote Debugging Service" (out of 45 proposals; IUP25k - `http://iup25k.up.pt/2012/`; prize: € 5000), 2012

- Recipient of the ICSE 2011 Microsoft Research Contest held at the International Conference on Software Engineering, Honolulu, Hawaii, USA, 2011

- Zoltar toolset, developed during his PhD research, awarded the Best Demo Award at the International Conference on Automated Software Engineering, 2009

- Awarded a postdoctoral scholarship from the Portuguese Foundation for Science and Technology in 2009 (renounced in favor of the professorship at the University of Porto)

- Recipient of "Erasmus" (2002-2003) and "Leonardo Da Vinci" (2004-2005) European grants

- Received two school merit awards (University of Minho): 1999/2000 and 2002/2003

7 Scientific Activities

7.1 Research Areas

Main area of research is software engineering with an emphasis on software analysis, evolution, maintenance, testing, and debugging. His research aims at improving these specific phases of the software development to reduce cost and time-to-market, while increasing software quality (e.g., less bugs, more secure). He is also interested in empirical software engineering, quantum software engineering, cybersecurity, and applied artificial intelligence.

Rui also strives to combine and bring together methods and techniques from several research areas, as demonstrated by publications in top tier conferences and journals in artificial intelligence, software engineering, cybersecurity, and formal methods.

7.2 Research Positions

Rui holds/held the following positions at research institutions:

Senior Research Member Information and Decision Support Systems Lab (IDSS), Instituto de Engenharia de Sistemas e Computadores, Investigacao e Desenvolvimento em Lisboa (INESC-ID), Portugal (February 2017 – present)

Research Member High-Assurance Software Laboratory (HasLab), Institute for Systems and Computer Engineering of Porto (INESC TEC), Portugal (November 2011 – February 2017)

Researcher Software Engineering Lab at Faculty of Engineering of University of Porto, Portugal (September 2009 – February 2017; Lab Manager between September 2009 and August 2013)

Integrated Member High-Assurance Software Laboratory (HasLab) at University of Minho, Portugal (November 2009 – October 2011)

Research Assistant Embedded Software Group at Delft University of Technology, the Netherlands (January 2009 – August 2009)

Research Assistant Software Engineering Research Group at Delft University of Technology, the Netherlands (August 2005 – December 2008)

Research Associate Embedded Software Institute, the Netherlands (August 2005 – September 2009)

Research Intern Compiler Construction group at Philips Research Labs, Eindhoven (October 2004 – June 2005)

7.3 Metrics

📈 **Total number of publications**
    151

Summary:

Journals	17
Book chapters	12
Conferences/Workshops	98
Proceedings	5
Patents	3
National Conferences and Workshops	11
Technical reports	3
Theses	2

📈 The following metrics were obtained from `Google Scholar` on July 4, 2019.

- Citations: 3862

- h-index: 30

- i10-index: 58

📈 Author of **344** highly influential citations, according to SemanticScholar.

🗄 Scientific databases:

Google Scholar `http://scholar.google.com/citations?user=x25BFgEAAAAJ&hl=en`

ORCID `http://orcid.org/0000-0003-3734-3157`

SCOPUS `http://www.scopus.com/authid/detail.uri?authorId=16479696600`

ResearcherID `http://www.researcherid.com/rid/A-8119-2015`

DBLP `http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/a/Abreu:Rui.html`

Authenticus `https://www.authenticus.pt/R-000-KWV`

SemanticScholar `https://www.semanticscholar.org/author/Rui-Abreu/1712624`

7.4 Publications

The CORE ranking and whether or not the conference is indexed by the ISI Web of Knowledge and Scopus databases are presented when appropriated. For journal publications the 5-year impact factor is also given.

7.4.1 Journals

1. L. Cruz and R. Abreu, **To the Attention of Mobile Software Developers: Guess What, Test your App!**. Empirical Software Engineering, 2019 [5-Y Impact Factor: 2.933; 🗄: ISI Web of Knowledge, Scopus]

2. A. Perez, R. Abreu, and A. Van Deursen, **A Theoretical and Empirical Analysis of Program Spectra Diagnosability**. IEEE Transactions on Software Engineering, 2019 [5-Y Impact Factor: 3.331; 🗄: ISI Web of Knowledge, Scopus]

3. L. Cruz and R. Abreu, **Catalog of energy patterns for mobile applications**. Empirical Software Engineering (2019): 1-27, 2019. (🏷 **Accepted for Journal-First presentation at ESEC-FSE19**) [5-Y Impact Factor: 2.933; 🗄: ISI Web of Knowledge, Scopus]

4. S. Reis and R. Abreu, **A Database of Existing Vulnerabilities to Enable Controlled Testing Studies**. International Journal of Secure Software Engineering (IJSSE), Volume 8, 2017 [ISI Web of Knowledge]

5. L. Passos, R. Abreu, and R. Rossetti, **Empirical Evaluation of Similarity Coefficients for Multiagent Fault Localization**. IEEE Transactions on Systems, Man, and Cybernetics: Systems, IEEE CS, 2016 [5-Y Impact Factor: 2.44; 🗄: ISI Web of Knowledge, Scopus]

6. W.E. Wong, R. Gao, Y. Li, R. Abreu, and F. Wotawa, **A Survey on Software Fault Localization**. IEEE Transactions on Software Engineering, IEEE CS, 2016 [5-Y Impact Factor: 2.35; ≋: ISI Web of Knowledge, Scopus, **ACM Notable Article**]

7. A. Perez and R. Abreu, **Framing program comprehension as fault localization**. Journal of Software: Evolution and Process 28(10): 840-862, 2016 [5-Y Impact Factor: 1.167; ≋: ISI Web of Knowledge, Scopus]

8. B. Hofer, A. Perez, R. Abreu, and F. Wotawa, **On the empirical evaluation of similarity coefficients for spreadsheets fault localization**. Automated Software Engineering Journal (ASEJ), Volume 22, Issue 1, pp. 47-74, Springer, 2015 [5-Y Impact Factor: 1.240 ≋: ISI Web of Knowledge, Scopus]

9. R. Abreu, B. Hofer, A. Perez, and F. Wotawa, **Using constraints to diagnose faulty spreadsheets**. Software Quality Journal (SQJ), Volume 23, Issue 1, pp. 297-322, Springer, 2015 [5-Y Impact Factor: 0.88 ≋: ISI Web of Knowledge, Scopus]

10. A. Perez, R. Abreu, and A. Riboira, **A dynamic code coverage approach to maximize fault localization efficiency**. Journal of Systems and Software (JSS), Volume 90, pp. 18-28, Elsevier, 2014 [5-Y Impact Factor: 1.282; ≋: ISI Web of Knowledge, Scopus]

11. A. Riboira, R. Rodrigues, R. Abreu, and J. Campos, **Integrating interactive visualizations of automatic debugging techniques on an IDE**. International Journal of Creative Interfaces and Computer Graphics (IJCICG), 2013 [≋: ISI Web of Knowledge]

12. B. Hofer, R. Abreu, and F. Wotawa, **AI for the Win: Improving Spectrum-based Fault Localization**. ACM SIGSOFT Software Engineering Notes, Volume 37, Issue 6, pp.1-8, ACM Press, 2012 [≋: ISI Web of Knowledge]

13. R. Abreu, P. Zoeteweij, and A.J.C. van Gemund, **Simultaneous Debugging of Software Faults**. Journal of Systems and Software (JSS), Volume 84 n. 4, pp.573-586, Elsevier, 2011 [5-Y Impact Factor: 1.282; ≋: ISI Web of Knowledge, Scopus]

14. A. Gonzalez-Sanchez, E. Piel, R. Abreu, H-G. Gross, and A.J.C. van Gemund, **Prioritizing Tests for Software Fault Diagnosis**. Journal of Software: Practice and Experience, John Wiley & Sons, Ltd., 2011 [5-Y Impact Factor: 0.573; ≋: ISI Web of Knowledge, Scopus]

15. R. Abreu and A.J.C. van Gemund, **Diagnosing Multiple Intermittent Failures Using Maximum Likelihood Estimation**. Artificial Intelligence Journal (AIJ), Volume 174(18), pp. 1481–1497, Elsevier, 2010 [5-Y Impact Factor: 3.106; ≋: ISI Web of Knowledge, Scopus]

16. R. Abreu, A. Gonzalez, P. Zoeteweij, and A.J.C. van Gemund, **Using Fault Screeners for Software Error Detection**. L.A.Maciaszek, C. Gonzalez-Perez, and S. Jablonski (Eds.): ENASE 2008/2009 Revised Best Papers, Lecture Notes in Communications in Computer and Information Science (CCIS), Volume 69, pp. 60–74. Springer-Verlag, 2010 [5-Y Impact Factor: 2.794; ≋: ISI Web of Knowledge, Scopus]

17. R. Abreu, P. Zoeteweij, R. Golsteijn, and A.J.C. van Gemund, **A Practical Evaluation of Spectrum-based Fault Localization**. Journal of Systems and Software (JSS), Elsevier, 2010 [5-Y Impact Factor: 1.282; ≋: ISI Web of Knowledge, Scopus]

7.4.2 Book Chapters

1. R. Ceballos, R. Abreu, A. J. Varela-Vaca, and R.M. Gasca, **Model-Based Software Debugging** In Fault Diagnosis of Dynamic Systems, Springer Nature Switzerland AG, 2020 (to appear)

2. R. Abreu, S. Außerlechner, B. Hofer, and F. Wotawa, **Testing for Distinguishing Repair Candidates in Spreadsheets – the Mussco Approach**. In Lecture Notes in Computer Science, Volume 9447, eds. K. El-Fakih, G. Barlas, N. Yevtushenko, pp. 124-140. ISBN: 978-3-319-25944-4. Springer International Publishing, 2015

- In Proceedings of the 27th IFIP WG 6.1 International Conference on Testing Software and Systems (ICTSS'15), Sharjah and Dubai, United Arab Emirates, November 23-25, 2015 [CORE: C; 🗄: ISI Web of Knowledge, Scopus]

3. Birgit Hofer, André Riboira, Franz Wotawa, Rui Abreu, and Elisabeth Getzner, **On the Empirical Evaluation of Fault Localization Techniques for Spreadsheets**. In Lecture Notes in Computer Science, Volume 7793, eds. Vittorio Cortellessa and Daniel Varro, pp. 68-82. ISBN: 978-3-642-37056-4. Springer International Publishing, 2013

    - In Proceedings of the 16th International Conference on Fundamental Approaches to Software Engineering (FASE 2013), held as Part of the European Joint Conferences on Theory and Practice of Software (ETAPS 2013), Rome, Italy, March 16-24, 2013 [CORE: B; 🗄: ISI Web of Knowledge, Scopus]

4. A. Gonzalez-Sanchez, E. Piel, R. Abreu, H-G. Gross, A.J.C. van Gemund, **Prioritizing Tests for Fault Localization**. In Situation Awareness with Systems of Systems, eds. P. van de Laar, J. Tretmans, and M. Borth, pp. 247-257. ISBN: 978-1-4614-6229-3. Springer International Publishing, 2013 [🗄: Scopus]

5. J. Santos and R. Abreu, **Lightweight Automatic Error Detection by Monitoring Collar Variables**. In Lecture Notes in Computer Science, Volume 7641, ed. Brian Nielsen and Carsten Weise, 215-230. ISBN: 978-3-642-34690-3. Berlin, Heidelberg: Springer International Publishing, 2012

    - In Proceedings of the 24th IFIP International Conference on Testing Software and Systems (ICTSS'12), Aalborg, Danmark, 2012 [CORE: C; 🗄: ISI Web of Knowledge, Scopus]

6. Cesar Andres, Rui Abreu, and Alberto Nunez. **OCE: An Online Colaborative Editor**. In Lecture Notes in Computer Science, Volume 7654, ed. Ngoc Thanh Nguyen, Kiem Hoang and Piotr Jedrzejowicz, 89-98. ISBN: 978-3-642-34706-1. Springer International Publishing, 2012

    Proceedings of the 4th International Conference on Computational Collective Intelligence. Technologies and Applications (ICCCI 2012), Ho Chi Minh City, Vietnam [CORE: C; 🗄: ISI Web of Knowledge, Scopus]

7. R. Abreu; A. Gonzalez-Sanchez; A.J. C. van Gemund. **A Diagnostic Reasoning Approach to Defect Prediction**. In Modern Approaches in Applied Intelligence, ed. Kishan G. Mehrotra, Chilukuri K. Mohan, Jae C. Oh, Pramod K. Varshney, Moonis Ali, 416 - 425. ISBN: 978-3-642-21826-2. Springer International Publishing, 2011

    Proceedings of the 24th International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems (IEA/AIE 2011), Syracuse, New York, USA, 2011 [CORE: C; 🗄: ISI Web of Knowledge, Scopus]

8. P. Casanova; B. Schmerl; D. Garlan; R. Abreu. **Architecture-Based Run-Time Fault Diagnosis**. In Software Architecture, ed. Ivica Crnkovic, Volker Gruhn, and Matthias Book, 261 - 277. ISBN: 978-3-642-23797-3. Springer International Publishing, 2011

    Proceedings of the 5th European Conference on Software Architecture (ECSA'11), Essen, Germany, LNCS Springer Verlag, 2011 [CORE: A; 🗄: ISI Web of Knowledge, Scopus]

9. A. Riboira; R. Abreu. **The GZoltar Project: A Graphical Debugger Interface**. In Lecture Notes in Computer Science, Volume 6303, ed. Leonardo Bottaci and Gordon Fraser, 215 - 218. ISBN: 978-3-642-15584-0. Berlin, Heidelberg: Springer Berlin Heidelberg, 2010

    Proceedings of the Testing: Academia and Industry Conference - Practice And Research Techniques (TAIC PART'10), pp. 215–218, Windsor, United Kingdom, September 2010. Springer Verlag [🗄:ISI Web of Knowledge, Scopus]

10. P. Zoeteweij, R. Abreu, and A.J. C. van Gemund **Fault Localization in Embedded Software**. In TRADER: Reliability of High-Volume Consumer Products, 1 - 200. ISBN:. Eindhoven: Embedded Systems Institute, 2009

11. P. Zoeteweij, R. Abreu, and A.J. C. van Gemund. **Spectrum-Based Fault Localization in Practice**. In TRADER: Reliability of High-Volume Consumer Products, 1 - 200. ISBN: 978-90-78679-04-2. Eindhoven: Embedded Systems Institute, 2009

12. R. Abreu; P. Zoeteweij; A.J. C. van Gemund. **A Model-Based Software Reasoning Approach to Software Debugging**. In Opportunities and Challenges for Next-Generation Applied Intelligence, ed. Been-Chian ChienTzung-Pei Hong, 233 - 239. ISBN: 978-3-540-92813-3. Berlin, Heidelberg: Springer Berlin Heidelberg, 2009

    Proceedings of the 22nd International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems (IEA-AIE'09), Tainan, Taiwan, June 2009. Studies in Computational Intelligence [CORE: C; ▧: ISI Web of Knowledge, Scopus]

7.4.3 International Conferences and Workshops

1. Luis Cruz, R. Abreu, J. Grundy, L. Li and X. Xia, **Do Energy-oriented Changes Hinder Maintainability?**. In Proceedings of the 35th The International Conference on Software Maintenance and Evolution (ICSME'19), Cleveland, OH, USA, 2019 [CORE: A; ▧: ISI Web of Knowledge, Scopus]

2. T. Durieux, F. Madeiral, M. Martinez, and R. Abreu, **Empirical Review of Java Program Repair Tools: A Large-Scale Experiment on 2, 141 Bugs and 23, 551 Repair Attempts**. In Proceedings of the 27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Tallinn, Estonia, 2019 (❧ **Distinguished Paper Award**) [CORE: A*; ▧: ISI Web of Knowledge, Scopus]

3. D. Correia, R. Abreu, P. Santos and J. Nadkarni, **MOTSD: A Multi-Objective Test Selection Tool using Test Suite Diagnosability**. In Proceedings of the 27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering — Tool Demos (ESEC/FSE) , Tallinn, Estonia, 2019 [CORE: A*; ▧: ISI Web of Knowledge, Scopus]

4. S. Reis, R. Abreu, and M. D'Amorim, **Demystifying the Combination of Dynamic Slicing and Spectrum-based Fault Localization**. In Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence (IJCAI'19), Macau, China, July, 2019 [CORE: A*; ▧: ISI Web of Knowledge, Scopus]

5. L. Cruz and R. Abreu, **EMaaS: energy measurements as a service for mobile applications**. In Proceedings of the International Conference on Software Engineering (ICSE'19) – New Ideas and Emerging Research Track, Montreal, Canada, 2019. IEEE Computer Society [CORE: A*; ▧: ISI Web of Knowledge, Scopus]

6. D. Paterson, J. Campos, R. Abreu, G.M. Kapfhammer, G. Fraser, and P. McMinn, **An Empirical Study on the Use of Defect Prediction for Test Case Prioritization**. In Proceedings of the 12th IEEE Conference on Software Testing, Validation and Verification, Xian, China, 2019. IEEE Computer Society [CORE: A; ▧: ISI Web of Knowledge, Scopus]

7. A. Ozdemir, A. Tosun, H. Erdogmus and R. Abreu, **Lightweight Source Code Monitoring with Triggr**. In Proceedings of the 33rd IEEE/ACM International Conference on Automated Software Engineering (ASE'18), Montpellier, France, 2018. IEEE Computer Society [CORE: A; ▧: ISI Web of Knowledge, Scopus]

8. A. Perez and R. Abreu, **Leveraging Qualitative Reasoning to Improve SFL**. In Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence (IJCAI'18), Stockholm, Sweden, July, 2018 [CORE: A*; ▧: ISI Web of Knowledge, Scopus]

9. L. Cruz and R. Abreu, **Measuring the energy footprint of mobile testing frameworks**. In Proceedings of the 40th International Conference on Software Engineering: Companion Proceeedings (ICSE'18), Gothenburg, Sweden, June, 2018. ACM [CORE: A*; 🖥: ISI Web of Knowledge, Scopus]

10. A. Perez and R. Abreu, **A qualitative reasoning approach to spectrum-based fault localization**. In Proceedings of the 40th International Conference on Software Engineering: Companion Proceeedings (ICSE'18), Gothenburg, Sweden, June, 2018. ACM [CORE: A*; 🖥: ISI Web of Knowledge, Scopus]

11. L. Cruz and R. Abreu, **Using Automatic Refactoring to Improve Energy Efficiency of Android Apps**. In Proceedings of the XXI Ibero-American Conferences on Software Engineering (CiBSE'18), Bogota, Colombia, May, 2018. (🏆 **best paper award**) [🖥: ISI Web of Knowledge, Scopus]

12. A. Perez and R. Abreu, **Towards Combining Qualitative Reasoning with Spectrum-based Fault Localization**. In In Proceedings of the 26th International Workshop on Principles of Diagnosis (DX'18), Warsaw, Poland, 2018 [CORE: B]

13. A. Ang, A. Perez. A. van Deruse, and R. Abreu, **Revisiting the Practical Use of Automated Software Fault Localization Techniques**. In Proceedings of the 8th International Workshop on Program Debugging (IWPD'17), Toulouse, France, 2017. IEEE Computer Society.

14. J. Rubin, R. Abreu, A. Ganguli, S. Nelaturi, I. Matei, and K. Srichara, **Recognizing abnormal heart sounds using deep learning**. In Proceedings of the 2nd International Workshop on Knowledge Discovery in Healthcare Data Co-located with the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017), Melbourne, Australia, 2017 [CORE: A*; 🖥: ISI Web of Knowledge, Scopus]

15. S. Reis and R. Abreu, **Secbench: A Database of Real Security Vulnerabilities**. In Proceedings of the International Workshop on Secure Software Engineering in DevOps and Agile Development (SecSE), co-located with the European Symposium on Research in Computer Security Workshop (ESORICS 2017), Oslo, Norway, 2017 [🖥: Scopus]

16. S. Reis and R. Abreu, **Using Github to Create a Dataset of Natural Occurring Vulnerabilities**. In In Proceedings of the 26th International Workshop on Principles of Diagnosis (DX'17), Brescia, Italy, 2017 [CORE: B]

17. L. Cruz and R. Abreu, **Performance-based guidelines for energy efficient mobile applications**. In Proceedings of the 4th International Conference on Mobile Software Engineering and Systems (MOBILE-Soft@ICSE 2017), Buenos Aires, Argentina, 2017. IEEE Computer Society [CORE: B; 🖥: ISI Web of Knowledge, Scopus]

18. L. Cruz, R. Abreu, and J-N. Rouvignac, **Leafactor: improving energy efficiency of Android apps via automatic refactoring**. In Proceedings of the 4th International Conference on Mobile Software Engineering and Systems (MOBILESoft@ICSE 2017), Buenos Aires, Argentina, 2017. IEEE Computer Society [CORE: B; 🖥: ISI Web of Knowledge, Scopus]

19. A. Perez, R. Abreu, and A. van Deursen, **A test-suite diagnosability metric for spectrum-based fault localization approaches**. In Proceedings of the 39th International Conference on Software Engineering (ICSE 2017), Buenos Aires, Argentina, 2017. IEEE Computer Society [CORE: A*; 🖥: ISI Web of Knowledge, Scopus]

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7.4.4 Proceedings

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7.4.5 Patents

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7.4.6 National Conferences and Workshops

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6. J. Campos and R. Abreu, **RZoltar: a plug-in Eclipse for Regression Testing**. In Proceedings of the 5th Meeting of Young Researchers at UP (IJUP), Porto, Portugal, February 2012.

7. A. Perez and R. Abreu, **Fault Localization using Dynamic Code Coverage**. In Proceedings of the 5th Meeting of Young Researchers at UP (IJUP), Porto, Portugal, February 2012.

8. J. Santos and R. Abreu, **Lightweight Approach to Automatic Error Detection Using Program Invariants**. In Proceedings of the 5th Meeting of Young Researchers at UP (IJUP), Porto, Portugal, February 2012.

9. N. Cardoso and R. Abreu, **Towards Using Automatic Development-time Debugging Techniques on Run-time Systems**. In Proceedings of the 7th Doctoral Symposium on Informatics Engineering, pp.371-382, Porto, Portugal, January 2012.

10. A. Riboira, R. Abreu, and R. Rodrigues, **A Visual Debugger for Efficient Software Fault Localization**. In Proceedings of the 4th Meeting of Young Researchers at UP (IJUP), Porto, Portugal, February 2011.

11. J. Sousa, R. Abreu, R. Castro, and A. Santos, **Development of Services and Applications for Set-Top Boxes in Ambient Assisted Living Environments**. In Proceedings of the 4th Meeting of Young Researchers at UP (IJUP), Porto, Portugal, February 2011.

7.4.7 Technical Reports

1. P. Pinto, R. Abreu, and J. Cardoso, **Fault Detection in C Programs using Monitoring of Range Values: Preliminary Results**. Faculty of Engineering of University of Porto. Technical Report 2015.

2. A. Riboira and R. Abreu, **END: An Approach to Estimate Number of Defects**. Faculty of Engineering of University of Porto. Technical Report 2013.

3. Rui Abreu, **Extending Amber Tool to Support Static Analysis in Presence of Function Pointers**. Philips Research NatLab. Technical Report 2005.

7.4.8 Theses

1. R. Abreu, **Spectrum-based Fault Localization in Embedded Software**. PhD Thesis, Delft University of Technology, November 2009.

2. R. Abreu, **ASN.1 Encoder/Decoder Generator**. MSc Thesis, University of Minho, October 2004.

7.5 Scientific Projects

FaultLocker - FaultLocker: FAULT LOCalization and repair toolKit for dEpendable softwaRe

- Position: Project Leader
- Line of Attention: Techniques for automatic fault localization and repair of software systems
- Partners: INESC-ID and Faculty of Sciences of University of Lisbon
- Dates: September 2018 - August 2021
- Funding (€ 239.248): Portuguese Foundation for Science and Technology (FCT, PTDC/CCI-COM/29300/2017)

GreenSoftwareLab - Towards an Engineering Discipline for Green Software

- Position: Task Leader
- Line of Attention: Programming Refactorings for Better Energy Performance
- Partners: University of Minho, INESC TEC, University of Beira Interior, New University of Lisbon
- Dates: April 2016 - December 2019
- Funding (€ 154,485): Portuguese Foundation for Science and Technology (FCT, PTDC/EEI-ESS/5341/2014)

ANTAREX - AutoTuning and Adaptivity approach for Energy efficient eXascale HPC systems

- Position: Task Leader
- Line of Attention: Programming Models and Languages for Self-Adaptivity
- Partners: Politecnico di Milano, University of Porto, INRIA Rennes, CINECA, IT4Innovation, Sygic, ETH Zurich, Dompé

- Dates: September 2015 - August 2019
- Website: `http://antarex.fe.up.pt`
- Funding (€ 3,115,251): Horizon 2020 - Research and Innovation Framework Programme, European Commission

ADAPT - A Diagnostics Approach for Persistent Threat Detection

- Position: Task Leader
- Line of Attention: Detection and Diagnosis of Advanced Persistent Threats
- Partners: Galois, Inc.; PARC, Inc.; University of Edinburgh; Oregon State University
- Dates: July 2015 - June 2018
- Funding ($5,999,093): Defense Advanced Research Projects Agency (DARPA)

AIMS2 - Accelerated Improvement Method Strongstep 2

- Position: Project Member
- Line of Attention: Agile Software Development Methodologies
- Partners: University of Porto; Strongstep; Match Profiler
- Dates: December 2015 - May 2017
- Funding (€ 180,009.51): Portugal 2020 – Portuguese Innovation Agency, S.A.

PCM - An Integrated Approach to Interactive Patient Centric Monitoring

- Position: Co-Project Leader (with Jonathan Rubin and Hoda Eldardiry)
- Line of Attention: Health Condition Management using mobile and wearable technologies
- Partners: PARC, Inc.; Xerox Government Health Solutions
- Dates: January 2015 - December 2016
- Funding: Xerox Funded Research

Pre-sense - User and Device State Prediction for Time-Critical Recommendations

- Position: Co-Project Leader (with Linxia Liao and Hoda Eldardiry)
- Line of Attention: User and Device Condition Management
- Partners: PARC, Inc.; Xerox Services; TechSolve, Inc.
- Dates: January 2015 - December 2016
- Funding: Xerox Funded Research

AutoSeer - Automatic generation of Test Oracles for Software Error Detection

- Position: Project Leader
- Line of Attention: Devising methods and techniques for automatic error detection
- Partners: University of Porto; University of Minho; Critical Software
- Dates: April 2012 - March 2015
- Funding (€ 118,200): Portuguese Foundation for Science and Technology (FCT, PTDC/EIA-CCO/116796/2010)

PBGT - Pattern-based GUI testing

- Position: Project member (work package leader, co-submitted)
- Line of Attention: Automating the testing phase of software applications exploiting patterns
- Partners: University of Porto; University of Minho; TelBit, S.A.

- Dates: April 2012 - March 2015
- Funding (€ 110,481): Portuguese Foundation for Science and Technology (FCT, PTDC/EIA-EIA/119479/2010)

RL8 - Languages and tools for critical real-time systems

- Position: Project member
- Line of Attention: Challenges in Critical Real-time System
- Partners: University of Porto; University of Minho; INESC TEC
- Dates: April 2013 - March 2015
- Website: `https://sigarra.up.pt/feup/pt/PROJECTOS_GERAL.MOSTRA_PROJECTO?P_ID=67066`
- Funding (€ 402,049.30): Programa Operacional Regional do Norte (ON.2, NORTE-01-0124-FEDER-000062)

AIMS - Accelerated Improvement Method Support

- Position: Project member (work package leader)
- Line of Attention: Platform Service
- Partners: University of Porto; Strongstep; Multicert S.A.
- Dates: November 2011 - October 2013
- Website: `http://sigarra.up.pt/feup/pt/projectos_geral.mostra_projecto?P_ID=64381`
- Funding (€ 569,864): Portuguese Innovation Agency, S.A.

ArchDiag - Architecture-based Run-time Fault Diagnosis

- Position: Co-Project Leader (with David Garlan)
- Line of Attention: Methods and techniques for self-healing systems based on their architectures.
- Partners: University of Porto; Carnegie Mellon University; Samsung
- Dates: September 2011 - August 2014
- Website: `http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=1116848`
- Funding ($450,000): National Science Foundation (NSF), United States of America

TOCE - Testing Online Collaborative Editing

- Position: Project Leader
- Line of Attention: Develop and test a methodology for automating testing online editing using methods investigated by the partner institution
- Partners: University of Porto; Universidad Complutense de Madrid
- Dates: June 2011 - May 2013
- Funding (€ 10,000): Conselho de Reitores das Universidades Portuguesas (CRUP) - Luso/Spanish actions (E-25/11), Portugal/Spain

SSaaPP - Spreadsheets as a Programming Paradigm (`http://ssaapp.di.uminho.pt/`)

- Position: Project member
- Line of Attention: Diagnosis of Spreadsheets, developing intuitive ways to communicate diagnostic results to end-users
- Partners: University of Porto; University of Minho; Software Improvement Group

- Dates: May 2005 - April 2013
- Website: `http://ssaapp.di.uminho.pt/`
- Funding (€ 72,000): Portuguese Foundation for Science and Technology (FCT, PTDC/EIA-CCO/108613/2008)

GZoltar - A graphical, semi-automated debugger

- Position: Project Leader
- Line of Attention: Contributed to the development and progress of GZoltar. He also promotes GZoltar by presenting the techniques at various venues and companies
- Partners: University of Porto; Delft University of Technology
- Dates: November 2009 - *Present*
- Website: `http://www.gzoltar.com`

TRADER - Television Related Architecture and design to Enhance Reliability (`http://www.esi.nl/trader/`)

- Position: Project member (PhD Student)
- Line of Attention: Analysis and detection of imminent product failures, namely techniques for automatic error detection and diagnosis
- Partners: NXP Semiconductors; NXP Research; Philips TASS; Philips Consumer Electronics; Delft University of Technology; Design Technology Institute/Eindhoven University of Technology; IMEC; Leiden University; Embedded Systems Institute
- Dates: August 2005 - November 2009
- Website: `http://www.esi.nl/trader`
- Funding (€ 3,770,904): Dutch Ministry of Economic Affairs (BSIK03021 program).

Besides the projects mentioned above, Rui also contributed, as a trainee, to an UMTS troubleshooting application developed by Siemens, Portugal (in particular, he developed the ASN.1 encoder/decoder) as well as to the Amber tool, a race condition detection tool developed by Philips Research (developed the module to handle function pointers).

7.6 Students Supervision

7.6.1 PhD Students

Rui has supervised/is supervising the following PhD students:

Bruno Machado (Ben Gurion University of the Negev, co-supervised with Meir Kalech) Automatic Diagnosis of Software Security Exploits. (2019 — 2022, on going)

Francisco Ribeiro (UMinho, co-supervised with João Saraiva) Explaining Software Faults in Source Code. (2019 — 2022, on going)

Sofia Reis (IST) Understanding and Improving Security-oriented Static Analysis Techniques (2018 — 2022, on going)

Luis Cruz (FEUP/MAP-i) Guidelines to Develop Energy Efficient Mobile Applications (2013 — 2019)

Alexandre Perez (FEUP) Spectrum-based Diagnosis: Measurements, Improvements and Applications (2012 — 2018)

José Campos (U.Sheffield, co-supervised with Gordon Fraser) Search-based Unit Test Generation for Evolving Software (2012 — 2018)

Nuno Cardoso (FEUP, co-supervised with David Garlan) Spectrum-based Diagnosis for Run-time Systems (September 2011 — April 2016, carried out in the context of the ArchDiag project)

I collaborated closely with Alberto González Sanchez (TUDelft; I was part of his PhD thesis committee as his *informal adviser*), Lucio Sanchez Passos (PhD student at FEUP), and Paulo Casanova (Dual PhD student in the context of the CMU|Portugal program, Carnegie Mellon University and University of Coimbra).

7.6.2 MSc Students

Rui has supervised/is supervising the following MSc students:

Andre Sobral (IST) Using Deep Learning to Estimate Software Component Reliability, on going.

José Touret (IST) Automating UI tests generation for Mobile Apps, on going.

José Congo (IST) Assessing energy efficient patterns of Android apps, on going.

Jorge Veiga (IST) Analysis of the behavioral impact of code modifications, on going.

Vitor Fernandes (IST/CERN) Mining CERN's historical data of software development projects to improve its efficiency, on going.

David Lourenço (IST) An Approach to Aid Developers Understand Code Change in Code Review, on going.

Ricardo Morais (IST) Automatic refactoring for energy efficiency in continuous integration pipelines, on going.

Bruno Machado (IST) Measuring the quality of test suites, on going.

Daniel Correia (IST/Outsystems) Automatic OutSystems App Test Generation, on going.

Djamila Caetano (IST) Critical Analysis of the Quality of Test Cases in FLOSS projects, May 2019;

Mariana Almeida (IPAM) The Role of Design when Creating a Tourism-related App, June 2018;

Sofia Reis (FEUP) Assessing software vulnerabilities using Naturally Occurring Defects, June 2017.

Vasco Gonçalves (FEUP/MOG) Cloud Orchestration and Provisioning of TV studios, June 2017.

Daniel Mendonça (FEUP/Critical) Verification of Data intensive applications verification, June 2017.

Pedro Faria (FEUP/Synopsys Portugal) Test Automation in Continuous Integration for Hardware Validation, January 2017.

Tiago Fernandes (FEUP/CMU-SV) Sensor-Based Monitoring and Management of Software Artifacts, July 2016;

André Duarte (FEUP) Software Repository Mining Analytics to Estimate Software Component Reliability, July 2016;

João Nadais (FEUP): Hooray, I found the bug, July 2016;

Pavel Alexeenko (FEUP): MobileVJ: A mobile app for a novel wearable human sensing, July 2016;

Pedro Santos (FEUP): wTrainer: Apple Watch as your most personal and intelligent fitness trainer, July 2016;

Paulo Marcos (FEUP/MOG): A Centralized Monitoring Platform of Audiovisual Content, July 2016 (on going);

Tiago Cruzeiro (FEUP/Fraunhofer PT): A Lib for Optimizing Smartphones Energy Performance, July 2016 (on going);

André Mota (FEUP/Glint HS): JS Performance Certifier, February 2016;

Jorge Costa (FEUP): A Multi-Objective Approach to Test Suite Reduction, July 2015;

André Freitas (FEUP): Software Repository Mining Analytics to Estimate Software Component Reliability, July 2015;

Tiago Costa (FEUP): Spidious: Improving User's Efficiency on Email with Machine Learning and a Better Visualization Approach, July 2015;

Pedro Alves (FEUP)/JScrambler): Next-generation JavaScript Licensing Enforcing Techniques, July 2015;

Pedro Cunha (FEUP/Multicert): Long Term Signatures, February 2015;

João Henriques (FEUP/Glintt HS): A High Performance and Searchable Framework, February 2015;

Vitor Castro (FEUP/Movvo): Atypical Behavior in Commercial Spaces: Evaluation of the Impact of External Events, February 2015;

Diogo Ramalho (FEUP/Glintt HS): DICOM Server: An Application for Acquisition and Exchange of Medical Images between Healthcare Institutions, February 2015;

Renato Rodrigues (FEUP/Blip): Defining a test automation system for mobile Apps, February 2015;

João Anes (FEUP): MoveMe Mobile Application Evolution, July 2014;

Ana Ferreira (FEUP): Personal finances mobile application for seniors, July 2014;

Renato Rodrigues (FEUP): Defining a test automation system for mobile APPS, July 2014;

Diogo Ramalho (FEUP): DICOM Server: An application to collect and forward medical images, February 2014;

Carlos Gouveia (FEUP): HTML5-based Visualizations to Support Software Fault Isolation, July 2013;

Diogo Costa (FEUP): Cross-platform mobile development using Web Technologies, July 2013;

Luis Pinho (FEUP): Generating Asserts for Test Cases Efficiently, July 2013;

Pedro Machado (FEUP): Automatic Debugging of Android Applications, July 2013;

João Serra (FEUP/Glintt HS): Solução Mobile para Utentes na Saúde, July 2013;

João Gonçalves (FEUP/Glintt HS): Automatically Generating Documents for GP prescriptions, February 2013;

Eduardo Osório (FEUP/Fraunhofer Portugal): Interoperable Assistive Technologies, February 2013;

João Santos (FEUP): Automatic generation and placement of test oracles, July 2012;

Alexandre Perez (FEUP): Dynamic Code Coverage with Progressive Detail Levels, July 2012;

Afonso Rocha (FEUP/BME, Hungary): Peer to Peer Multicast Overlay for Smart Content Delivery, July 2012;

José Carlos Campos (FEUP): Regression Testing - Minimization, Selection and Prioritization of test cases within GZoltar, February 2012;

João Sousa (FEUP/Fraunhofer Portugal): Development Of Services and Applications for Set-Top Boxes in Ambient Assisted Living Environments, July 2011;

Shekhar Gupta (TUDelft): Applying SFL to logic circuits, May 2011;

André Riboira (FEUP): GZoltar: A Graphical Debugger Interface, February 2011;

Hélder Branco (FEUP/I2S): Autonomic Computing: Processamento de Eventos, July 2010;

Rui Azevedo (FEUP/I2S): Monitorização Integrada de Aplicações Empresariais, July 2010;

Marcelo Barreira (FEUP/I2S): Autonomic Computing – Registo de Eventos, July 2010;

Ricardo Castilho (FEUP/TUDelft): Reducing Screened Program Points for Efficient Error Detection, July 2010;

André Cunha (FEUP/TUDelft): An Empirical Investigation of Source Code Metrics and FindBugs Warnings, July 2010;

Michel Wilson (TUDelft): Bacinol: Bayesian Circuit Analysis by Topology, February 2010;

Ricardo Gonzalez (TUDelft/UValladolid): Applying SFL Diagnosis to CIG, September 2009;

Mario Plasencia (TUDelft/UValladolid): Automatic Error Detection Techniques Based on Bloom Filters, February 2008;

Alberto González Sanchez (TUDelft/UValladolid): Automatic Error Detection Techniques Based on Dynamic Invariants, August 2007;

Rafi Vayani (TUDelft): Improving Automatic Software Fault Localization, July 2007. (**best TUDelft/EWI MSc Thesis Award**).

7.7 Research/Scholarships Supervision

Thomas Durieux (INESC-ID; postdoc) Research and development of automatic software repair technologies. FaultLocker Project, February 2019–present.

Johanna Berner (INESC-ID and UAS Technikum Vienna; MSc) Online Machine Learning for Network Traffic Classification: A Deep Learning Approach using Firewall Activity Data. January–July 2019.

Jorge Mendes (HASLab, PhD) Development of an Application to Analyze Energy Consumption of Java Applications. GreenSoftwareLab Project, August 2017–July 2018.

Ruben Pereira (FEUP/Strongstep, MSc) A module to monitor and assess software development management processes. AIMS2 Project, Abril–September 2016.

Tiago Costa (FEUP, MSc) Automatic Test Suite Minimization based on Multiple Criteria. RL8 Project, February–July 2015.

Jorge Costa (FEUP, MSc) Improved Visualization of Automated Diagnostic Reports. RL8 Project, August–July 2015.

Tiago Cardoso (FEUP, MSc) Bringing the Human into the Loop - Generating Oracles for Automatically Generated Tests. RL8, October 2014–January 2015.

Tiago Cardoso (CMU, MSc) Model-based Assistance for Making Time/Fidelity Trade-offs in Component Compositions (co-supervised by David Garlan, Full Professor at Carnegie Mellon University). CMU|Portugal program Undergraduate Summer Internships, August–September 2014.

José Campos (FEUP, MSc) Information Gain-based Automated Test Generation. AutoSeer Project, April 2012–October 2013.

André Riboira (FEUP, PhD) Automatic Debugging of Spreadsheets. SSaPP Project, March–September 2011.

Tom Janssen (TUDelft, MSc) Developing an Automatic Debugging Toolset. TRADER Project, November 2008–May 2009.

7.8 Scientific Committees, Panels, Session Chair

ICSE-NIER20 International Conference on Software Engineering — New Ideas and Emerging Results Track (ICSE2020-NIER)

ICST20 International Conference on Software Testing and Validation (ICST20), 2020 (Co-General Program Chair)

FutureOfComputing19 2nd School on the Future of Computing, 2019 (Steering Committee Member)

ASE19 International Conference on Automated Software Engineering — Tools Track, 2018 (Program Committee Member; Member of the Rapid Response Team)

VVIoT19 Second International Workshop on Verification and Validation of Internet of Things, 2019 (Program Co-Chair)

INForum2019 INForum - Portuguese Informatics Symposium, 2019 (Program committee member)

ESEC/FSE 2019 The joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, 2019 (Program Committee Member)

IEA/AIE19 International Conference on Industrial, Engineering, Other Applications of Applied Intelligent Systems, 2019 (Program Committee Member)

TAIC-PART19 Workshop on Testing: Academia-Industry Collaboration, Practice and Research Techniques, 2019 (Co-General Chair)

ICST19 International Conference on Software Testing and Validation (ICST19), 2019 (Session Chair)

SAC-WT'19 Web Technologies (WT) track of the 34th ACM Symposium on Applied Computing, 2018 (Program Committee Memeber)

VVIoT18 First International Workshop on Verification and Validation of Internet of Things, 2018 (Program Co-Chair)

INForum2018 INForum - Portuguese Informatics Symposium, 2018 (Program committee member)

IDEAR18 The International Workshop on Debugging and Repair, 2018 (Program Committee Member)

ESEC/FSE 2018 The joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, 2018 (Program Committee Member)

SEDES'18 Portuguese Doctoral Symposium on Informatics Engineering, 2018 (Program Committee Member)

QRS'18 IEEE International Conference on Software Quality, Reliability & Security, 2018 (Co-Program Chair)

ICSE-NIER'18 International Conference on Software Engineering – New Ideas and Emerging Research, 2018 (Program Committee Member)

SAC-WT'18 Web Technologies (WT) track of the 33rd ACM Symposium on Applied Computing, 2018 (Program Committee Memeber)

AAAI'17 American Association for Artificial Intelligence, 2017 (Program Committee Member)

IWPD'17 8th International Workshop on Program Debugging, 2017 (Program Committee Member)

DX'17 International Workshop on Principles of Diagnosis, 2017 (Program Committee Member)

EPIA'17 18th EPIA Conference on Artificial Intelligence, 2017 (Program Committee Member)

INForum2017 INForum - Portuguese Informatics Symposium, 2017 (Program committee member)

IEEE SW 50 Years IEEE Software - 50 YEARS SE Theme Issue, 2017 (Program Committee Member)

SoftStart'17 1st International Workshop on Software Engineering for Startups, 2017 (Program Committee Member)

CP'17 23rd International Conference on Principles and Practice of Constraint Programming (sub-reviewer)

ESEC/FSE 2017 The joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, 2017 (Program Committee Member)

ECAI'16 European Conference on Artificial Inteligence, 2016 (Program Committee Member)

HiPEAC CSW'16 HiPEAC 2016 Spring edition of the Computing System Week, 2016 (Thematic Session co-Organizer: Energy-driven Software Optimization)

QRS'16 2015 IEEE International Conference on Software Quality, Reliability and Security, 2016 (Program committee member)

DX'16 27th International Workshop on Principles of Diagnosis, 2016 (Program co-chair);

IWPD'16 7th International Workshop on Program Debugging, 2016 (Program Committee Member)

COMPSAC'16 40th IEEE Computer Society International Conference on Computers, Software & Applications, 2016 (Program committee member)

EMSE'16 Special Issue on Automated Software Debugging in Empirical Software Engineering Journal, 2016 (Lead Guest Editor)

ASE'16 31st IEEE/ACM International Conference on Automated Software Engineering, 2016 (Tutorial chair)

DSIE'15 10th Doctoral Symposium in Informatics Engineering, 2016 (Program committee member)

IWPD'15 6th International Workshop on Program Debugging, 2014 (Program chair)

CSE'15 18th IEEE International Conference on Computational Science and Engineering, 2015 (Publicity chair)

QRS'15 2015 IEEE International Conference on Software Quality, Reliability and Security, 2015 (Program committee member)

DX'15 26th International Workshop on Principles of Diagnosis, 2015 (Program committee member)

ICTSS'15 The 27th IFIP International Conference on Testing Software and Systems, 2015 (Program committee member)

SEMS'15 2nd International ICSE Workshop on Software Engineering Methods in Spreadsheets, 2015 (Program committee member)

COMPSAC'15 The 39th Annual International Computers, Software and Applications Conference, 2015 (Program committee member)

AAAI'15 American Association for Artificial Intelligence, 2015 (Program Committee Member)

EUC'15 14th IEEE International Conference on Embedded and Ubiquitous Computing, 2015 (Program Chair)

TAROT'14 10th TAROT Summer School on Software Testing, 2014 (School Director)

DX'14 25th International Workshop on Principles of Diagnosis, 2014 (General chair)

SEDES'14 Portuguese Doctoral Symposium on Informatics Engineering, 2014 (Program Chair)

IWPD'14 5th International Workshop on Program Debugging, 2014 (Program committee member)

INForum2014 INForum - Portuguese Informatics Symposium, 2014 (Program committee member)

ICTSS'14 The 26th IFIP International Conference on Testing Software and Systems, 2014 (Program committee member)

SERE'14 Secure Systems and Reliability Improvement, 2014 (Program committee member; doctoral symposium committee member)

FLIP-Mobile-13 International Flipped Workshop on Quality Assurance of Mobile Software and Applications, 2013 (Program committee member)

ICTSS'13 The 25th IFIP International Conference on Testing Software and Systems, 2013 (Program committee member, PhD Symposium Chair)

QSIC'13 International Conference on Quality Software, 2013 (Session Chair)

IWPD'12 4th International Workshop on Program Debugging, 2012 (Program committee member)

FutDeb'13 International Workshop on the Future of Debugging (invited speaker; invitation only workshop)

IEEE ISBC'13 IEEE Iberian Student Branch Congress, 2013 (Panelist, **invited**)

ICTSS'13 The 25th IFIP International Conference on Testing Software and Systems, 2013 (Program committee member,PhD Workshop Chair)

TSE-TH'13 The Symposium on Engineering Test Harness, 2013 (Program committee member)

WS-FMDS'13 3rd Workshop on Formal Methods in the Development of Software, 2013 (Program committee member)

DX'13 24th International Workshop on Principles of Diagnosis, 2013 (Program committee member)

DXC-2013 Fourth International Diagnostic Competition, 2013 (jointly organized by NASA Ames Research Center and PARC - Software Track co-organizer)

INForum2013 INForum - Portuguese Informatics Symposium, 2013 (Program committee member)

DSIE'13 7th Doctoral Symposium in Informatics Engineering, 2013 (Program committee member)

TDSS'12 Special issue on Testing and Debugging of Software Systems of the Advances in Software Engineering Journal, 2012 (Lead Guest Editor)

IWPD'12 3rd International Workshop on Program Debugging, 2012 (Program committee member, Session chair)

PHM'12 1st European conference of the prognostics and health management society, 2012 (Program committee member)

WS-FMDS'12 2nd Workshop on Formal Methods in the Development of Software, 2012 (Program committee member)

QUATIC'12 8th International Conference on the Quality of Information and Communications Technology, 2012 (Image & Marketing Co-Chair)

SAC/SE'12 27th Annual ACM Symposium on Applied Computing - SE Track, 2012 (Program committee member)

Tool@ICSE'12 34th International Conference on Software Engineering - Poster and Informal Tool Demonstrations Track, 2012 (Program committee member)

DSIE'12 7th Doctoral Symposium in Informatics Engineering, 2012 (Program committee member)

IWPD'11 2nd International Workshop on Program Debugging, 2011 (Panelist, **invited**)

DX'11 22nd International Workshop on Principles of Diagnosis, 2011 (Program committee member)

DXC-2011 Third International Diagnostic Competition, 2011 (jointly organized by NASA Ames Research Center and PARC - Software Track co-organizer)

DSIE'11 6th Doctoral Symposium in Informatics Engineering, 2011 (Program committee member)

WS-FMDS'11 1st Workshop on Formal Methods in the Development of Software, 2011 (Program committee member)

SAC/SE'11 26th Annual ACM Symposium on Applied Computing - SE Track, 2011 (Program committee member)

TeBug2011 1st International Workshop on Testing and Debugging, 2011 (**General co-chair**, Program committee member)

ACSEAC'11 2011 African Conference on Software Engineering & Applied Computing, 2011 (Program committee member)

ICSTE'11 2nd International Conference on Software Technology and Engineering, 2011 (Session chair)

DX'10 21st International Workshop on the Principles of Diagnosis, 2010 (Program committee member)

QUATIC'10 7th International Conference on the Quality of Information and Communications Technology - Quality in ICT Validation & Verification Track, 2010 (Program committee member)

TAIC PART'10 The Testing: Academic and Industrial Conference - Practice and Research Techniques, 2010 (Program committee member)

DSIE'10 5th Doctoral Symposium in Informatics Engineering, 2010 (Program committee member)

7.9 Reviewerships

The Editorial Board of TOSEM listed Rui Abreu as a Distinguished Referee for 2011-2012 to recognize the contributions of the reviews provided (both the quantity and quality).

Besides serving as a reviewer to the conferences listed in the previous section, Rui has also reviewed to the following journals/conferences:

- IEEE Intelligent Systems, 2019

- 23rd International Symposium on Formal Methods (FM19), 2019

- Systems Engineering, 2018

- Journal of Information and Software Technology (IST), 2016-2019

- Journal of Concurrency and Computation: Practice and Experience, 2016-2019

- Empirical Software Engineering Journal (EMSE), 2015–2019

- Elsevier Journal Science of Computer Programming (SCICO), 2016-2018

- Journal of Applied Soft Computing Journal, 2016-2018

- Elsevier Science of Computer Programming (SCICO), 2016-2018

- Transactions on Software Engineering (TSE), 2012–2019

- Transactions on Software Engineering and Methodology (TOSEM), 2011–2019

- Journal on Software Testing, Verification and Reliability (STVR), 2013–2019

- Software: Practice and Experience (SPE), 2015-2019

- IEEE Transactions on Reliability, 2015–2019

- Journal of Systems and Software (JSS), 2011–2019

- ACM Transactions on Autonomous and Adaptive Systems (TAAS), 2015

- Journal of Logical and Algebraic Methods in Programming (JLAMP), 2015

- Elsevier Journal on Information and Software Technology, 2015

- Journal on Mathematical Problems in Engineering, 2015

- Journal of Information Science and Engineering, 2015

- IEEE Transactions on Systems, Man and Cybernetics, 2014

- Annals of Telecommunications, 2014

- Computing, 2014

- Testing Portugal by PSTQB - the Portuguese branch of ISTQB, 2013–2014

- International Conference on Software Engineering, 2013

- Journal of Computational Science, 2012–2013

- The Computer Journal, 2012

- Journal of Software Maintenance and Evolution: Research and Practice (JSME), 2012-2013

- Computer Languages, Systems & Structures Journal (COMLAN), 2012–2014

- Journal of Software: Evolution and Process (JSME), 2012

- AAAI Journal of Artificial Intelligence Research (JAIR), 2012–2014

- Software Engineering Process Group (SEPG) Europe Conference, 2012

- Journal of Computer Engineering Research, 2011

- Journal of Advances in Software Engineering, Hindawi Publishing Corporation, 2011

- Book on Software Engineering for Self-adaptive Systems (SEfSASBook), LNCS State-of-the-Art series, 2011

- International Journal of Software Engineering and Knowledge Engineering (IJSEKE), 2011

- Information Processing Letters (IPL), 2011

- Software: Practice and Experience (SPE), 2011-2016

- Special Issue on selected papers of the TAIC PART 2010 of the Software: Practice and Experience (SPE), 2011

- Special Issue on Analysis and Testing of Embedded Software of the Journal of Systems and Software (JSS), 2011

- Special Issue on Model-Based Testing for Embedded and Real-Time Communication Systems (MBT4ERTCS) of the International Journal of Embedded and Real-time Communication Systems (IJERTCS), 2010

- IEEE Working Conference on Mining Software Repositories (MSR'10), 2010

- Applied Mathematics Letters, Elsevier, 2010

- IEEE International Conference on Software Maintenance (ICSM'09), 2009

- International Workshop on Principles of Diagnosis (DX'09), 2009

- IEEE International Conference on Program Comprehension (ICPC'09), 2009

- International Conference on Evaluation Novel Approaches to Software Engineering (ENASE'08), 2008

- IEEE International Workshop on Source Code Analysis and Manipulation (SCAM'06), 2006

Rui has also reviewed project proposals for funding from the following institutions:

- National Center of Science and Technology Evaluation — Kazakhstan, 2017

- Regional Program for Scientific Cooperation STIC-AmSud, France and Latin American Institutions, 2012-2014.

- University Research Board of the American University of Beirut, 2010.

7.10   Invited Talks / Keynotes

- Rui Abreu, The Future Is Coming Tomorrow: But Don't Forget Your Charger, 2nd School on the Future of Computing, July 2019 (Host: School Organizers; together with Luis Cruz)

- Rui Abreu, Coverage-Based Automated Testing and Debugging, Tutorial at the 19th International Conference on Quality, Reliability, and Security, July 2019 (Host: QRS Organizers; TA: Bruno Lima)

- Rui Abreu, Measuring and Improving Software Fault Diagnosis, 15th Bar Ilan Symposium on Foundations of Artificial Intelligence, Bar Ilan University, Ramat Gan, Israel, June 2019 (Host: Organizers of the BISFAI conference)

- Rui Abreu, My Journey on Software Fault Diagnosis, ICST19 Doctoral Symposium, Xian, China, April 2019 (Host: Organizers of the ICST19 Doctoral Symposium)

- Rui Abreu, Spectrum-based Diagnosis: Measurements, Improvements and Applications, Melbourne, Australia, November 2018 (Host: John Grundy, Monash University)

- Rui Abreu, Spectrum-based Diagnosis: Measurements, Improvements and Applications, Kanpur, India, July 2018 (Host: T.V. Prabhakar, Indian Institute of Technology, Kanpur)

- Rui Abreu, Knowledge Transfer of Research Ideias, Lisbon, Portugal, July 2017 (Host: Sofia Santos, Faber Ventures)

- Rui Abreu, Diagnosis of Complex Software Systems, Terrassa, Barcelona, Spain, Jul7 2017 (VII International Summer School on Fault Diagnosis of Complex Systems)

- Rui Abreu, Testing and Debugging Software-Intensive Systems (Luminary Presentation: Joint PHM/DX Keynote), Denver, CO, USA, October, 2016 (Annual Conference of the Prognostics and Health Management Society)

- Rui Abreu, Reality vs. Desire: Automatic Software Testing and Debugging (Invited Speech), October, 2016 (International Workshop on Program Debugging)

- Rui Abreu, Automatic Software Testing and Debugging, Amazon – Alexa Team, Sunnyvale, CA, USA, August, 2016 (Host: A. Mandal)

- Rui Abreu, Scent Intensification for Efficient Diagnosis. Aristotles Group, Georgia Institute of Technology, GA, USA, January, 2016 (Host: A. Orso)

- Rui Abreu, GZoltar - A Toolset for Automatic Test Suite Minimization and Fault Identification. 2nd International Workshop on the Future of Debugging (FutDeb2013), Lugano, Switzerland, July, 2013 (Invitation only; Organizers: A. Orso and S. Chandra)

- Rui Abreu, Automating the debugging phase with GZoltar. 8th Conference of Portuguese Computer Science Students (ENEI 2013), Porto, Portugal, April, 2013

- Rui Abreu, Cues for Better Scent in Debugging. Software Verification and Validation Lab, University of Luxembourg, Luxembourg, February 2013 (Host: L. Briand)

- Rui Abreu, GZoltar: an Eclipse plug-in for Testing and Debugging. Dagstuhl Seminar on Fault Prediction, Localization, and Repair, Dagstuhl, Germany, February 2013 (Invitation only; Organizers: Mary Jean Harrold, Friedrich Steimann, Frank Tip, and Andreas Zeller; Website: http://goo.gl/vc6Cl)

- Rui Abreu, Fault Localization of Software Systems. Departamento de Informática de la Universidad de Valladolid, Valladolid, Spain, January 2013 (Host: B. Pulido)

- Rui Abreu, Automatic Debugging of Software Programs. Séminaires METHODES 2012, Département Logiciels-Réseaux, INSTITUT TELECOM/ TELECOM SudParis, Evry France, June 2012 (Host: A. Cavalli)

- Rui Abreu, Automated Debugging: are we close?. 2nd International Workshop on Program Debugging (IWPD'11), Munich, July 2011 (Host: E. Wong and T.H. Tse)

- Rui Abreu, Automated Debugging: are we close?. Back to basics colloquia, Faculty of Engineering of University of Porto, Porto, June 2011 (Host: R. Morla)

- Rui Abreu, Automatic Testing and Debugging. Department of Informatics, University of Minho, Braga, June 2011 (Host: J. Saraiva)

- Rui Abreu, Can we test and diagnose systems automatically?. ADDAS: Assuring Dependability in Architecture-based Adaptive Systems Project meeting, funded by the CMU|Portugal program, University of Coimbra, Coimbra, 2011 (Host: R. de Lemos)

- Rui Abreu, Automated Debugging: is it possible?. Center of Informatics and Information Technology, New University of Lisbon, Lisbon, May 2011 (Host: L. Caires)

- Rui Abreu, Automated Diagnosis of Software Systems. Faculty of Engineering of University of Porto, Porto, January, 2010 (Host: J. Cardoso and N. Flores)

- Rui Abreu, Spectrum-based Fault Localization. NASA Ames, Mountain View, California, USA, July 2009 (Host: Scott Poll)

- Rui Abreu, Spectrum-based Fault Localization. Palo Alto Research Center, Palo Alto, USA, July 2009 (Host: Johan de Kleer)

7.11 Prototypes

DDU-Maven-Plugin (on going) A maven plugin offering a test-suite diagnosability metric (available at `https://github.com/aperez/ddu-maven-plugin`). Part of the PhD work of Alexandre Perez.

Pangolin - A software visualization toolset for program comprehension (on going) Rui has conceptually contributed to the development and progress of Pangolin, idealizing the main concepts behind the toolset. Featured in `https://goo.gl/2FvQjR`. Part of the PhD work of Alexandre Perez.

GZoltar - A Graphical Debugger (on going) Rui has conceptually contributed to the development and progress of GZoltar, especially for the testing extensions. In addition, he provides code reviews and design patterns and solutions to improve the quality and maintainability of the core. He also promotes GZoltar by presenting the techniques at various venues and companies. Research projects: GZoltar, SFL/MBD, Z. For further information on GZoltar, visit `http://www.gzoltar.com`.

MHS² Efficient toolset to compute minimal hitting sets (available at `https://github.com/~npcardoso/MHS2` and `http://mhs2.algorun.org/`). Featured in `https://en.wikipedia.org/wiki/Set_cover_problem`. Part of the PhD work of Nuno Cardoso.

Nanjin - Automatically detecting errors (2007-2008) Rui has conceptually contributed to the development and progress of Nanjin. In addition, he provides code reviews and design patterns and solutions to improve the quality and maintainability of the core. Research project: AutoSeer.

PetTool - Pattern-based testing tool (2009-2010) Rui has conceptually contributed to the progress of PetTool, in particular contributing to the additions of new features. Research project: PBGT.

ConBug - Spreadsheet's Debugging (2011-2012) He provided the project vision and roadmap, planning the scope of release milestones and track progress, designing new features, and writing code and unit tests. Research project: SSaaPP.

Zoltar - Automating the Debugging process (2005-2009) Rui was in charge of managing the direction of the Zoltar core. His duties consisted of providing a project vision and roadmap, planning the scope of release milestones and track progress, designing new features, and writing code and unit tests. Zoltar was an outcome of his doctoral dissertation, being currently used at NXP Semiconductors. Research project: TRADER.

7.12 Research Visits

June 2019 Department of Software and Information Systems Engineering, Ben Gurion University of the Negev, Be'ersheba, Israel. Host: Meir Kalech and Roni Stern.

November 2018 Department of Computer Science, Monash University, Melbourne, Australia. Host: John Grundy.

July 2018 Department of Computer Science, Indian Institute of Technology, Kanpur. Host: T.V. Prabhakar.

June, November, December 2012, and June–July 2013 Department of Network Software, TELECOM & Management SudParis, Paris, France. Host: Ana Cavalli.

January 2012 Universidad Complutense de Madrid, Madrid, Spain. Host: Cesar Andres Sanchez and Manual Nunez.

November 2010 Monterrey Institute of Technology and Higher Education (ITESM), Monterrey, Mexico. Host: Rafael Salazar.

September 2010 - January 2011 Institute of Software Research, Carnegie Mellon University, Pittsburgh, PA, USA. Host: David Garlan.

June - July 2009 Palo Alto Research Center (PARC), Palo Alto, California, USA. Host: Johan de Kleer.

8 Pedagogical Activities

8.1 Pedagogical Areas

Pedagogical activities are centered in the areas of software engineering and formal methods. Being responsible for the creation of the syllabus and contents of 8 courses, he lectured several courses since he joined the Faculty of Engineering of University of Porto in September 2009.

He has been invited to help the University of Lúrio in Mozambique to establish a course in Computer Laboratories. Furthermore, he was involved in the definition of syllabuses of two courses being offered in the MAP-I - Joint PhD Program between the Universities of Minho, Aveiro and Porto in Portugal (`http://map.edu.pt/i`).

He achieved relatively high-standard pedagogical classifications in the students' pedagogical inquiries.

8.2 Involvement in PhD Programs

He is/was committed (either lecturing or PhD students' supervision) to the following PhD programs:

- DEIC — PhD in Computer Science and Engineering (Instituto Superior Técnico, University of Lisbon)

- PRODEI — Doctoral Program in Informatics Engineering (Faculty of Engineering of University of Porto)

- MAP-I — Joint Doctoral Program in Informatics offered by the Universities of Minho, Aveiro and Porto

- Doctoral Program in Software Engineering (namely, in the context of the Dual PhD programs offered in the CMU|Portugal program)

8.3 Creation or Reformulation of Programs/Courses

Programs He has been involved in the creation of the following programs:

- Postgraduate Conversion Program in Software Development (FEUP), 2016

- Masters in Software Engineering (FEUP), 2016

Courses Since starting regular teaching activities in 2009, Rui has been responsible for creating all the materials as well as the syllabus for the following courses. When planning the content of a course, Rui not only discusses the foundations but also the state-of-the-art, this way preparing the students to face real-world challenges.

- Software Architectures, Computer Science Degree and Integrated Master in Networks and Information Systems, Faculty of Sciences of University of Porto, 2016

- Security Issues in Software Engineering, Master in Information Security, Faculty of Sciences of University of Porto, 2016

- Software Engineering, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, 2015

- Software Testing, MAP-i doctoral program in Computer Science, 2015

- Distributed Systems, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, 2010

- Computer Laboratory, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, 2010

- Source Code Analysis and Manipulation, MAP-i doctoral program in Computer Science, Universities of Minho, Aveiro, and Porto, 2010

- Operating Systems, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, 2009

Rui has been involved in the creation of the following courses

- Computer Laboratory, Licenciatura in Informatics Engineering, Faculty of Engineering and Natural Sciences, University of Lúrio, Mozambique, 2010

- Achieving Quality in Software through Automatic Testing and Debugging, Continuing Education, Faculty of Engineering of University of Porto, Porto, 2011 (together with Ana Paiva).

8.4 Lecturing

In the following, MIEIC stands for Integrated Master in Informatics and Computing Engineering (FEUP), MIEEC for Integrated Master in Electrical and Computers Engineering (FEUP), LEIC for Licenciatura Bolonha em Engenharia Informática e Computadores (IST), LERC for Licenciatura Bolonha em Engenharia de Telecomunicações e Informática (IST), and MEIC for Mestrado em Engenharia Informatáica e de Computadores (IST). Note that different institutions have different means to report pedagogical performance.

2018/2019

- Lecturer, Foundations of Programming, LEIC-T/LERC 1st semester (9 out of 9)
- Lecturer, Software Specification, MEIC 1st semester (8.88 out of 9)
- Lecturer, Software Engineering, LEIC-T/LERC 2nd semester

2017/2018

- Lecturer, Foundations of Programming, LEIC-T/LERC 1st semester (8 out of 9)
- Lecturer, Software Engineering, LEIC-T/LERC 2nd semester
- Lecturer, Software Engineering, post-graduation in Software and Information Systems Engineering (SISE, co-developed by IST and Deloitte), July 2018

2016/2017

- Lecturer, Software Engineering, MIEIC 1st semester (average: 6.15 out of 7; standard deviation: 1.18)
- Recitations' lecturer, Software Development Laboratory, MIEIC 1st semester (average: 6.79 out of 7; standard deviation: 0.41)
- Lecturer, Software Engineering, LEIC-T/LERC 2nd semester (8.06 out of 9)

2015/2016

- Lecturer, Software Engineering, MIEIC 1st semester (average: 6.09 out of 7; standard deviation: 0.93)
- Recitations' lecturer, Software Development Laboratory, MIEIC 1st semester (average: 6.00 out of 7; standard deviation: 1.73)
- Co-Lecturer, Software Testing, MAP-i doctoral program in Computer Science 1st semester (average: N/A, standard deviation: N/A)
- Lecturer, Security Issues in Software Engineering, Master in Information Security, Faculty of Sciences of University of Porto, 1st semester, responsible (average: 5.00 out of 7; standard deviation: 0.00)
- Recitations' lecturer, Compilers, MIEIC 2nd semester (average: 5.63 out of 7; standard deviation: 1.29)
- Recitations' lecturer, Project Management Laboratory, MIEIC 2nd semester (average: 5.60 out of 7; standard deviation: 1.50)
- Lecturer, Software Architecture, Computer Science Degree and Integrated Master in Networks and Information Systems, Faculty of Sciences of University of Porto, 2nd semester, responsible (average: N/A, standard deviation: N/A)

2013/2014

- Recitations' lecturer, Software Engineering, MIEIC 1st semester (average: 6.33 out of 7; standard deviation: 0.78)
- Recitations' lecturer, Formal Methods in Software Engineering, MIEIC 1st semester (average: 5.80 out of 7; standard deviation: 1.14)
- Co-Lecturer, Source Code Analysis and Manipulation, MAP-i doctoral program in Computer Science 1st semester (average: N/A, standard deviation: N/A)

- Lecturer, Distributed Systems, MIEIC 2nd semester, responsible (average: 6.05 out of 7; standard deviation: 1.00)

- Recitations' lecturer, Compilers, MIEIC 2nd semester (average: 5.65 out of 7; standard deviation: 1.77)

- Recitations' lecturer, Project Management Laboratory, MIEIC 2nd semester (average: 6.67 out of 7; standard deviation: 0.58)

2012/2013

- Recitations' lecturer, Software Engineering, MIEIC 1st semester (average: 6.40 out of 7; standard deviation: 0.70)

- Recitations' lecturer, Formal Methods in Software Engineering, MIEIC 1st semester (average: 6.35 out of 7; standard deviation: 0.65)

- Co-Lecturer, Source Code Analysis and Manipulation, MAP-i doctoral program in Computer Science 1st semester (average: N/A, standard deviation: N/A)

- Lecturer, Distributed Systems, MIEIC 2nd semester, responsible (average: 6.07 out of 7; standard deviation: 1.00)

- Recitations' lecturer, Compilers, MIEIC 2nd semester (average: 6.06 out of 7; standard deviation: 0.85)

- Recitations' lecturer, Project Management Laboratory, MIEIC 2nd semester (average: 5.80 out of 7; standard deviation: 0.45)

2011/2012

- Recitations' lecturer, Software Development Laboratory, MIEIC 1st semester (average: 3.94 out of 5, standard deviation: 0.70)

- Recitations' lecturer, Formal Methods in Software Engineering, MIEIC 1st semester (average: 4.10 out of 5, standard deviation: 0.96)

- Lecturer, Distributed Systems, MIEIC 2nd semester, responsible (average: 4.02 out of 5, standard deviation: 0.75)

- Recitations' lecturer, Compilers, MIEIC 2nd semester (average: 4.02 out of 5, standard deviation: 0.93)

- Recitations' lecturer, Project Management Laboratory, MIEIC 2nd semester (average: 4.30 out of 5, standard deviation: 0.46)

2010/2011

- Co-lecturer, 15-313 - Foundations of Software Engineering, Software Engineering Minor 1st semester, Carnegie Mellon University, USA (average: N/A, standard deviation: N/A)

- Co-Lecturer, Source Code Analysis and Manipulation, MAP-i doctoral program in Computer Science 1st semester (average: N/A, standard deviation: N/A)

- Lecturer, Distributed Systems, MIEIC 2nd semester, responsible (average: 3.93 out of 5, standard deviation: 0.89)

- Recitations' lecturer, Compilers, MIEIC 2nd semester (average: 3.99 out of 5, standard deviation: 0.88)

- Recitations' lecturer, Project Management Laboratory, MIEIC 2nd semester (average: 4.16 out of 5, standard deviation: 0.64)

2009/2010

- Lecturer, Operating Systems, MIEIC 1st semester, responsible (average: 4.25 out of 5, standard deviation: 0.80)

- Recitations' lecturer, Distributed Systems, MIEIC 1st semester (average: 3.96 out of 5, standard deviation: 0.92)
- Lecturer, Computer Laboratory, MIEIC 2nd semester, responsible (average: 4.16 out of 5, standard deviation: 0.65)
- Recitations' lecturer, Computer Architectures and Operating Systems, MIEEC 2nd semester (average: 3.52 out of 5, standard deviation: 0.65)

Note that the materials for courses which Rui was responsible for, such as slides for the lectures and practical assignments, were created by him.

8.5 Invited Lectures

- Invited Lecture at the 11st Tarot Summer School on Software Testing: "Crowbar: A Framework for Testing and Debugging", Cadiz, Spain, June 29-July 2, 2015 (Host: TAROT Summer School's organizers)

- Invited Lecture at the 29th CREST Open Workshop (COW) on Software Redundancy: "Exploiting Redundant Test Cases in Fault Localization: Good or Bad?", London, UK, November 18-19, 2013 (Together with PhD student: A. Perez; Host: Jenks Krinke and Mark Harman)

- Invited Lecture at the PSTQB - the Portuguese branch of ISTQB - forum: "Automating the Testing and Debugging Phases of the Software Lifecycle", Lisbon, Portugal, March 5, 2013 (Host: L. Amaral)

- Invited lecture at the 6th Tarot Summer School on Software Testing: "Fault Diagnosis of Software Systems", Graz, Austria, June 21-25, 2010 (Host: TAROT Summer School's organizers)

- Invited lecture at Model-based Computing masters course, Delft University of Technology: "Diagnosing Software Faults", Delft, the Netherlands, October 10, 2007 (Host: A. Feldman)

- Invited Lecture at the First Trader Symposium, Embedded Systems Institute: "Spectrum-based Fault Localization", Eindhoven, the Netherlands, October 4, 2006 (Host: R. Mathijssen)

8.6 Academic Committees

8.6.1 PhD Committees

PhD External Examiner Rui Pereira, Energyware Engineering: Techniques and Tools for Green Software Development, PhD Thesis' External Committee Member, University of Minho, 2018

PhD External Committee Member Bob Edmison, Applying Spectrum-based Fault Localization to Generate Debugging Suggestions for Student Programmers, PhD Thesis' External Committee Member, Virginia Tech, USA, 2017

PhD External Examiner Gulsher Laghari, Optimising and Assessing the Effectiveness of Spectrum Based Fault Localisation, PhD Thesis Defense, University of Antwerp, Belgium, April/May 2017

PhD External Examiner Eudisley Gomes dos Anjos, Assessing Maintainability in Software Architectures, PhD Thesis Defense, University of Coimbra, Portugal, November 2016

PhD Internal Examiner André Restivo, Incremental Modular Testing in Aspect Oriented Programing, PhD Thesis Defense, University of Porto, Portugal, July 2016

PhD External Examiner João Franco, Automated Reliability Prediction and Analysis from Software Architectures, PhD Thesis Defense, University of Coimbra, Portugal, April 2016

PhD Internal Examiner Lucio Passos Sanchez, Spectrum-based Fault Localization in Multi-Agent Systems, PhD Thesis Defense, University of Porto, Portugal, December 2015

PhD External Examiner Amit Raj, Fault Localisation in Distributed Adaptive Systems, PhD Thesis Defense, Trinity College, Ireland, September 2015

PhD Thesis Proposal Committee Chair Inês Morgado, Automated Pattern-Based Testing of Mobile Applications, PhD Thesis Proposal, University of Porto, Portugal, April 2014

PhD Thesis Proposal Committee Chair Nuno Silva, Online Semi-Supervised approach for Human Activity Recognition, PhD Thesis Proposal, University of Porto, Portugal, February 2014

PhD Thesis Proposal Committee Chair João Jacob, Estimating Player Performance and Adaptivity in Exergames and Location-based Games. PhD Thesis Proposal, University of Porto, Portugal, February 2014

PhD Thesis Proposal Committee Member Paulo Casanova, Fault Detection and Diagnosis in Autonomic Systems. PhD Thesis Proposal, Carnegie Mellon University, USA and University of Coimbra, Portugal, December 2013

PhD Thesis Proposal Committee Chair Tiago Fernandes, Automated pipeline for generating 3D scenes from text written in natural language. PhD Thesis Proposal, University of Porto, Portugal, November 2013

PhD Thesis Proposal Committee Chair Luis Matias, On Improving Operational Planning and Control in Public Transportation Networks using Streaming Data: A Machine Learning Approach. PhD Thesis Proposal, University of Porto, Portugal, November 2013

PhD External Examiner Alessandra Bagnato, Modeling and Verification in Model-Based Software Engineering - Application to Embedded Systems Systems, PhD Thesis defense, Telecom Sud Paris & University d'Evry-Val d'Essone, France, February 2013

PhD External Examiner Alberto González Sanchez, Cost Optimizations in Runtime Testing and Diagnosis. PhD Defense, Delft University of Technology, the Netherlands, September 2011

PhD Thesis Proposal Committee Chair Lucio Passos, Diagnosis of Unwanted Behaviours in Adaptive MAS, PhD Thesis Proposal, University of Porto, Portugal, July 2011

8.6.2   MSc Committees

MSc Committee Member Benson Mariro, Rule based machine translation of spreadsheet formulas to natural language expressions, Master of Science in Computer Science at the North West University, February 2019;

MSc Committee Member Adriano Pinto, Saving Energy in Android Applications with Memoization, Masters in Informatics Engineering, Faculty of Science and Technology of New University of Lisbon, June 2018;

MSc Committee Member Mariana Oliveira, Automated Requirements Analysis using Natural Language Processing, Integrated Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, June 2018;

MSc Committee Member Pedro Pontes, A Pattern-based Testing Framework for IoT Ecosystems, Integrated Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, June 2018;

MSc Committee Member Rui Monteiro, Tests in Continuous Delivery, Masters in Informatics Engineering, Polytechnic of Porto - School of Engineering, Portugal, November 2017;

MSc Committee Member André Silva, Model-oriented Spreadsheet Evolution, Master in Informatics Engineering, University of Minho, Portugal, December 2013;

MSc Committee Member Ricardo Fonseca, Testing Automation Framework, Master in Informatics Engineering, University of Minho, Portugal, December 2013;

MSc Committee Chair Ricardo Silva, Testing in the context of Agile Methodologies in the BPI Bank, Master in Informatics Engineering, University of Minho, Portugal, July 2013

MSc Committee Chair João Figueiredo, Modularization of Large Web Applications, Master in Informatics Engineering, University of Minho, Portugal, July 2013

MSc Committee Member Jorge Mendes, Evolution of Model-Driven Spreadsheets, Master in Informatics Engineering, University of Minho, Portugal, September 2012

MSc Committee Member Luis Couto, Analysing call graphs for software architecture quality profiling, Master in Informatics Engineering, University of Minho, Portugal, June 2012

MSc Committee Member Nuno Veiga, Generating automatic tests based on models, Master in Informatics Engineering, University of Minho, Portugal, June 2012

MSc Committee Member Hugo Ribeiro, Metrics to Assess Quality of Spreadsheets, Master in Informatics Engineering, University of Minho, Portugal, June 2012

MSc Committee Member Alberto González Sanchez, Cost Optimizations in Runtime Testing and Diagnosis, PhD Thesis defense, Delft University of Technology, the Netherlands, September 2011

MSc Committee Chair Luis Matias, Generating International e-commerce Visualizations and Analyzing them as Social Networks, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, September 2011

MSc Committee Member Elisângela Rosa, A Comparison of Methodologies to Create Business Ontologies, MSc Thesis defense, Master in Informatics Engineering and Information Systems, University of Minho, January 2011

MSc Committee Chair Francisco Andrade, Automatic Testing Generating From Algebraic Specifications, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, July 2010

MSc Committee Chair Hugo Gomes, Automating the Testing Process Mobile, Multi-platform Services, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, July 2010

MSc Committee Chair João Pinto, Tools to support practical teaching of software engineering, Master in Informatics and Computing Engineering, Faculty of Engineering of University of Porto, July 2010

9   Knowledge Transfer

9.1   Turning Technology into Business

Crowbar   Efforts in turning technology into business mainly include efforts to spin-out a company (Crowbar, `www.crowbar.io`) for semi-automatic testing and debugging start-up.

He has been a key person in pitching the idea to Venture Capital and Business Angels. In 2013, a Venture Capital has valued Crowbar in € 1.7M, and made an effort to invest € 500,000. As the details are confidential, more information can be given by request only.

Furthermore, a patent has been filed to protect an idea to perform debugging of heterogeneous systems remotely (patent number PCT/IB2013/051247, see 7.4.5).

I have co-founded DashDash in January 2017, a platform to create web apps using only spreadsheet skills. The company has secured \$9M in Series A funding in May 2018. Company profile can be found at `https://www.crunchbase.com/organization/dashdash`.

Misc. Projects   Since 2010, he has been involved in several projects with private companies (e.g., I2S, Strongstep, Multicert), non-government organizations (PSI/Mozambique). His work revolved around good practices for development large and complex software systems.

9.2   Consultancy Services

Consultancy   Part of his work is to provide professional or expert advice in software engineering, in particular in testing and debugging (for instance, write and execute automated acceptance tests of mobile apps using Calabash/Capybara). Examples of companies for which he has already provided advice include, but are not limited to, CoolAdvance, NXP Semiconductors, Philips Research, Efacec, Critical Software, PT Inovação, Strongstep, Shortcut, I2S Informática - Sistemas e Serviços S.A., NGO PSI/Mozambique, Government agencies, UTIS. Furthermore, he also creates and lectures workshops and refresher courses in his areas of expertise.

Reviewer   Rui has been a reviewer for projects proposed by small and medium enterprises to the National Strategic Reference Frameworks (NSRF, QREN in Portuguese), responsible for managing the EU Structural Funds (2012-2013).

Venture Capital   He holds an advisory role with the PortugalVentures, a Government-owned Venture Capital Firm (`http://www.portugalventures.pt/`), and Novabase Capital.

9.3   Technology Transfer

Invited speaker in several workshops, research groups' colloquia, as well as companies to present his latest findings, in particular in the area of software testing and debugging (see Section 7.10 and Section 8.5 for further information).

Furthermore, he/his work featured in Portuguese media. In particular:

Diário de Noticias - A green catalog to reduce energy consumption of mobile phones (https://www.dn.pt/lusa/interior/investigadores-criam-catalogo-que-ajuda-a-reduzir-o-consumo-de-bateria-das-aplicacoes-11021247.html), June 2019.

Noticias ao Minuto - A green catalog to reduce energy consumption of mobile phones (https://www.noticiasaominuto.com/tech/1272728/investigadores-criam-catalogo-para-reduzir-consumo-de-bateria-de-apps), June 2019.

TSF - A green catalog to reduce energy consumption of mobile phones (https://www.tsf.pt/lusa/interior/investigadores-criam-catalogo-que-ajuda-a-reduzir-o-consumo-de-bateria-das-aplicacoes-11021248.html), June 2019.

Tek Sapo - A green catalog to reduce energy consumption of mobile phones (https://tek.sapo.pt/noticias/computadores/artigos/catalogo-de-padroes-de-energia-foca-se-na-eficiencia-energetica-em-sistemas-de-computacao), June 2019.

PPLWare - A green catalog to reduce energy consumption of mobile phones (https://pplware.sapo.pt/smartphones-tablets/catalogo-online-de-apps-bateria/), June 2019.

Wintech - A green catalog to reduce energy consumption of mobile phones (https://wintech.pt/w-news/26606-1-catalogo-focado-na-eficiencia-energetica-de-aplicacoes-moveis-nasceu-em-portugal), June 2019.

Noticias RTV (in Spanish) - A green catalog to reduce energy consumption of mobile phones (https://noticiasrtv.com/catalogo-en-linea-de-apps-que-consumen-menos-bateria-en-los-smartphones/), June 2019.

University of Porto's portal - FEUP researchers propose software application to help in software comprehension (https://goo.gl/2FvQjR), May 2014.

The Next Big Ideia - SIC Noticias, Private Portuguese Television - Remote Debugging Service (`http://goo.gl/3SCe2`, in Portuguese), January 2013;

Mentes que Brilhan - Porto Canal, Private Portuguese Television - Software Debugging Research (`https://www.youtube.com/watch?v=d0OprcH-ZvE`), December 2012;

Porto Alive (Live show) - Porto Canal, Private Portuguese Television - Remote Debugging Service - winner of RedEmprendia (`http://goo.gl/CTnIM`, in Portuguese), November 2012;

RTP Informação, Public Portuguese Television - Software Defects (`http://goo.gl/PC0FK`, in Portuguese), February 2012;

JPN Newspaper - FEUP researchers present the first bug hunger, March 2012;

Público Newspaper's P3 supplement - GZoltar: A bug hunter (`http://goo.gl/I1srh`, in Portuguese), March 2012;

Exame Informática Magazine - Finding Faults with GZoltar, (teaser online at `http://goo.gl/6uwuB` and full text in the April's edition of the magazine (pp. 80–81), in Portuguese), April 2012;

Semana Informática Magazine - The fourth generation has arrived, April 2012;

University of Porto's portal - FEUP proposes tool to localize software bugs, April 2012;

Engenharia num Minuto - RTP Informação, Public Portuguese Television - QR Codes, March 2012;

Engenharia num Minuto - RTP Informação, Public Portuguese Television - QWERTY, July 2012;

Público Newspaper - Economic Consequences of Software Failures, February 2012;

O Mundo Digital - TSF Radio Station - The GZoltar Debugger (podcast `http://podcast.cdn.tsf.pt/mun_20120725.mp3`), February 2012.

9.4 Organization of Events

He has (co-)organized the following events:

- 13th IEEE International Conference on Software Testing, Validation and Verification, 2020;

- 19th International Conference on Software Quality, Reliability and Security, 2018;

- 27th International Workshop on Principles of Diagnosis, 2016;

- 14th IEEE International Conference on Embedded and Ubiquitous Computing, 2015;

- 25th International Workshop on Principles of Diagnosis, 2014;

- 10th TAROT Summer School on Software Testing, Porto, Portugal, 2014;

- 8th International Conference on the Quality of Information and Communications Technology (QUATIC 2012), Lisbon, Portugal 2012;

- Gamelopers 2012 by Nokia at the Faculty of Engineering of University of Porto, Porto, Portugal, 2012 (Windows Mobile/Symbian QT Student Developer Challenge);

- First International Workshop on Testing and Debugging (TeBug2011), co-located with the IEEE International Conference on Software Testing, Verification and Validation (ICST'11), Berlin, Germany, 2011;

- Third International Diagnostic Competition (DXC-2011), co-located with the 22nd International Workshop on Principles of Diagnosis (DX-2011), Munich, Germany, 2011.

10 Management Activities

10.1 Scientific Management

Scientific Director CMU|Portugal program, January 2019 – Present

> **Duties and responsibilities** The Scientific Directors are responsible for developing strategies to craft, implement, and manage our research goals. The Board of Directors, ERC, Program directors, scientific directors and the coordination office all work in conjunction as a unified body of leaders and manager to ensure that the program works effectively.

Member of the IEEE Software's Initiatives Team IEEE Software Magazine, May 2015 – December 2018

> **Duties and responsibilities** IEEE Software Portuguese Translation co-Editor (reporting to Editorial Board member Rafael Prikladnicki)
>
> **Selection Process** Selected out of 140 "highly qualified" applications

Member of the Scientific Committee of the Doctoral Program in Informatics Engineering (ProDEI)
Faculty of Engineering of University of Porto, May 2011 – February 2017

> **Duties and responsibilities** Develop/adjust the program, define criteria for selecting students, identify instructional strategies which are likely to yield expected results, create and maintain the website, etc.

10.2 Pedagogical Management

Vice-director of the Masters in Software Engineering Faculty of Engineering of University of Porto, April 2016 – February 2017

> **Duties and responsibilities** Develop/adjust the program, define criteria for selecting students, identify instructional strategies which are likely to yield expected results, etc.

Director of the Postgraduate Conversion Programme in Software Development Faculty of Engineering of University of Porto, September 2016 – February 2017

> **Duties and responsibilities** Develop/adjust the program, define criteria for selecting students, identify instructional strategies which are likely to yield expected results, etc.
>
> Programme was developed in close collaboration with Deloitte.

Member of the Scientific Committee of the Continuing Education Program Faculty of Engineering of University of Porto, December 2010 – February 2017

> **Duties and responsibilities** Department of Informatics Engineering's Representative.

10.3 Institutional Management

Vice President for External Relations, Dept. Computer Science and Engineering Instituto Superior Técnico, University of Lisbon, January 2019 - present;

> **Duties and responsibilities** Manage relations with industrial partners; seek funding for department activities.

IST Ambassador to the Técnico Partner Network with Novabase Instituto Superior Técnico, April 2017 – Present

> **Duties and responsibilities** Promoting activities with Técnico to increase the visibility of Novabase with students

Member of the Working Group for the restructuring of MIEIC Faculty of Engineering of University of Porto, November 2015 – February 2017

> **Duties and responsibilities** Rethinking and restructuring the curriculum of the Integrated Masters in Informatics and Computing Engineering (MIEIC)

Member of the Department Council Dept. Informatics Engineering Faculty of Engineering of University of Porto, February 2011 - February 2017

> **Duties and responsibilities** Conduct academic planning; discuss and decide recommendations by other committees of the department; decide policy related to governance of the Department

Member of the Working Group for the reorganization of the Dept. Informatics Engineering Faculty of Engineering of University of Porto, January 2011 – April 2011

> **Duties and responsibilities** The working group's main goal was to create the big picture of the department with respect to scientific and pedagogical activities of its members.

Coordinator of the Software Engineering Laboratory Faculty of Engineering of University of Porto, May 2010 - July 2014

> **Duties and responsibilities** Daily Management of the laboratory.

Vice-president Erasmus Student Network - Minho, February 2003 – September 2004

> **Duties and responsibilities** Establish the union at the University of Minho ; represent the union in national and international events; organize events for Erasmus students

Social Department Director University of Minho Students Association, January 2001 – December 2002

> **Duties and responsibilities** Closely monitor the student community to identify and solve eventual social problems, and provide everyone an overwhelming experience in the academy.

Member of the University of Minho General Assembly University of Minho, December 2003 – March 2005

> **Duties and responsibilities** Students representative. Responsible to make the assembly aware of problematic students-related issues.