Curriculum Vitae – José Miguel Paiva Proença

CONTACT
INFORMATION

CISTER Research Center – ISEP
R.Dr. António Bernardino de Almeida 431
4249-015 Porto, Portugal

Phone: +351 228340502
E-mail: pro@isep.ipp.pt
WWW: https://jose.proenca.org

NATIONALITY   Portuguese

RESEARCH
INTERESTS

Software engineering, Concurrency, Coordination models, Wireless sensor networks, Product line engineering, Formal methods, Functional programming languages.

SHORT BIO

I graduated from the University of Minho as the best student in Math & Computer Science (2005), and continued to do my PhD in CWI, Amsterdam – a research institute in the top 28 of Europe and top 83 worldwide (http://research.webometrics.info). I worked on coordination models: models that describe how runtime components can interact with each other under the supervision of Prof. Farhad Arbab. In 2010 I moved to KU Leuven University, in Belgium – a university in the top 11 of Europe and top 77 worldwide (same source as above). I continued to work in the coordination field and investigated variability within the HATS european (FP7) project, collaborating mainly with Prof. Dave Clarke. In 2014 I started to collaborate within the Wireless Sensor Group, mainly with Prof. Danny Hughes, where I modelled and experimented with communication models in resource-constraint devices. In 2015 I returned to U.Minho, working as a post-doctoral researcher collaborating with Prof. Luis Barbosa, and taught as an invited assistant professor at U.Minho (2016-1019). I now work at CISTER/ISEP since February 2019, investigating coordination aspects in the context of Cyber-Physical Systems, and teaching as an invited assistant professor at ISEP. Currently I am mainly involved in the VALU3S european project, and I am leading the FCT project DaVinci since July 2018.

EDUCATION

– *PhD*   **January 2006 – December 2009**
  - Organisation: Research work at Centrum Wiskunde & Informatica (CWI), degree awarded by Leiden University (LIACS), Leiden, The Netherlands
  - Supervisors: Farhad Arbab (CWI and LIACS), Dave Clarke (KUL), and Erik de Vink (Eindhoven University of Technology – TUE)
  - Topic: Deployment of Distributed Component Based Systems
  - Core subjects: Coordination, concurrency, component-based systems, formal methods

– *Integrated MSc*   **September 2000 – October 2005**
  - Organisation: University of Minho (UM), Braga, Portugal
  - Degree: Licenciatura on Math & Computer Science (5-year degree) in 2005
  - ERASMUS mobility: 1 full semester of courses at University of Bristol, UK, in 2004
  - Internship: 1 month at University of Kent, in Canterbury, UK, working with Prof. Simon Thompson, during the final year project in 2005
  - Final grade: 18/20 (best for that year & degree)

– *Summer schools*
  - *2nd International Summer School on Deep Learning*, in Genova, Italy, 2018; Summer school on the recent advances of deep learning, covering theory and practice.
  - *School on Formal Models for Objects and Components*, in Bertinoro, Italy, 2012; Summer school covering areas such as type theory, programming languages, formal methods, concurrency and software engineering.
  - *Trends in Concurrency*, held in Prague, Czech Republic, 2008; Summer school on current research and future trends in concurrent systems design and implementation, including well-known speakers such as Martin Odersky and Byron Cook, among others.
  - *Summer School on Language-Based Techniques for Integrating with the External World*, in the University of Oregon, Eugene, USA, 2007; Summer school on programming languages, sponsored by ACM and Microsoft.

- *Marktoberdorf Summer School*, in Marktoberdorf, Germany, organised by NATO, 2006;
  Summer school on dependable software systems engineering, including the turing-awarded organisers and speakers Amir Pnueli and Tonny Hoare.
- *IPA Spring and Fall Schools* – I attended a school every spring and fall from 2006 until 2009, in different cities in the Netherlands, over a range of topics in computer science for PhD students and organised by IPA – Institute for Programming research and Algorithmics (http://www.win.tue.nl/ipa/).
- *Midland Graduate School*, in the University of Birmingham, UK, 2005;
  Summer school on Foundations of Computing Science, including the topics: category theory, typed lambda-calculus, denotational semantics, and functional programming.

– *Secondary School*   **September 1997 – June 2000**
- Organisation: Escola Secundária Carlos Amarante, Braga, Portugal
- Core subjects: Mathematics, Physics and Chemistry
- Final grade: 19/20

WORK
EXPERIENCE

– *Invited Assistant Professor ("Professor Auxiliar")*   **Sep 2019 – present**
- Organisation: ISEP, Porto, Portugal
- In charge of lab classes of courses:
  - "Programming Paradigms" (PPROG), for 1st year students (2020/21);
  - "Algorithms and Programming" (APROG), for 1st year students (2019/20);
  - "Primitive Concurrency Control Mechanisms" (SCOMP), for 2nd year students (2019/20);

– *Invited Assistant Professor ("Professor Auxiliar")*   **Fev 2016 – Fev 2019**
- Organisation: University of Minho (UM), Braga, Portugal
- Prepared and taught the course: "Software Architecture and Design Calculi", at a MSc degree (2016-http://ac1516.proenca.org, 2017-http://ac1617.proenca.org, and 2018-http://arca.di.uminho.pt/ac-1718)
- Planned and lectured the course: "Mathematics for Computer Science", under the program Qualifica-IT for the requalification of software scientists (2017-http://mi1718.proenca.org).
- In charge of lab classes of the courses:
  - "Functional Programming", for 1st year students (2016/17 and 2017/18);
  - "Laboratory of Informatics I", for 1st year students (2016/17, 2017/18, 2018/19);
  - "Laboratory of Informatics II", for 1st year students (2017/18);
  - "Program Calculation", for 3rd year students (2016/17).

– *Senior Researcher*   **Feb 2019 – present**
- Organisation: CISTER (ISEP), Porto, Portugal
- Topic: Coordination and monitoring of components in Cyber-Physical Systems

– *Post-doctoral Researcher*   **Feb 2018 – Jan 2019**
- Organisation: University of Minho (UM), Braga, Portugal
- Project leaders: Luís Barbosa (UM)
- Context: Chair PT-FLAD on Smart Cities & Smart Governance
- Topic: Coordination of concurrently evolving software components

– *Post-doctoral Researcher (FCT grant)*   **Mar 2013 – Jan 2014, Feb 2015 – Jan 2018**
- Organisation: University of Minho (UM), Braga, Portugal *and* KU Leuven University (KUL), Leuven, Belgium
- Project leaders: Luís Barbosa (UM) and Dave Clarke (KUL)
- Topic: Adaptable coordination
- Core business: Hybrid modelling of variability for synchronous coordination systems

– *Post-doctoral Researcher*   **February 2010 – January 2016**
- Organisation: KU Leuven, Belgium

- Project leaders: Dave Clarke (KUL) and Danny Hughes (KUL)
- Topic: Highly Adaptable and Trustworthy Software using Formal Models
- Core business: Specification and analysis of both variability in a concurrent language and component models for embedded devices.

– *PhD Researcher (FCT grant)*   **January 2006 – December 2009**
- Organisation: Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands
- Research interests: Coordination, Distributed systems, Formal methods.

– *Software engineer (work contract)*   **November 2005 – December 2005**
- Organisation: MULTICERT – Serviços de Certificação Electrónica SA, Porto
- Type of business or sector: Company on software certification
- Main activities and responsibilities: Programming, documenting and validating the implementation of certification standards.

– *Researcher (BIC grant)*   **April 2005 – October 2005**
- Organisation: PURE Project, Dep. Informática, Universidade do Minho;
- Type of business or sector: Scientific research in Computer Science.
- Main activities and responsibilities: Study and development of automatic program transformations;

– *Demonstrator*   **February 2004 to September 2004**
- Organisation: Dep. Informática, Universidade do Minho;
- Type of business or sector: Higher Education.
- Main activities and responsibilities: Teaching, tutorial guidance and project marking in a Computer Science subject;

PRIZES &
AWARDS

- Post-doctoral Fellowship by the Portugues foundation FCT (SFRH/BPD/91908, 2012);

- PhD Studenship by the Portugues foundation FCT (SFRH/BD/22485, 2005);

- Best graduated student in Computer Science at U.Minho, awarded by the Minister of Science, Technology and Higher Education, 2005;

- Best project in Cryptography at U.Minho, awarded by the company MultiCert, 2005;

- Best student in Computer Science at U.Minho in 2002, 2003, 2004, and 2005: awarded 4 Scholarship Merits;

- Best student that applied for the Computer Science degree, U.Minho, 2001, awarded a Scholarship of Excelence ("Prémio Conselho Académico").

SCIENTIFIC
MERIT

Scientific publications

The full list of peer-reviewed publications and edited volumes is attached in appendix, mainly compiled based on DBLP's repository, discarding technical reports. In Google Scholar (Feb 2021) my profile counts 68 publications, 662 citations, h-index 16, and i10-index 22. The majority of pre-prints are available online at `https://jose.proenca.org/publication`, and the names of the publications below are hyperlinks to the full documents.

Selection of 5 publications in the last 5 years that better reflect my research track.

- **ICTAC 2020 [16]** – **B in CORE, Q2 proceedings.** Implementing Hybrid Semantics: From Functional to Imperative, Sergey Goncharov, Renato Neves, José Proença, ICTAC, Lecture Notes in Computer Science, Volume 12545, Pages 262–282.

  Overview: This paper reflects my recent trend in real-time systems, targeting systems that entangles both discrete and continuous behaviours. This line of work goes beyond timed

automata and towards hybrid automata, where continuous behaviour is given by differential equations.

My core contribution was to the development of a prototype tool to perform simulations of hybrid programs (with differential equations) symbolically without approximations.

- **COORDINATION 2019 [19] – B in CORE2018, but A in CORE2017 and before, Q2 proceedings.** Coordination of tasks on a Real-Time OS, Guillermina Cledou, José Proença, Bernhard H.C. Sputh, and Eric Verhulst, COORDINATION, Lecture Notes in Computer Science, Volume 11533, Pages 250–266.

  Overview: This work was developed in collaboration with a Belgian company Altreonics, to reason over the task orchestration mechanism in their Real-Time operating system.

  This paper reflects the technology transfer of recent work to an industrial setting, which was recently extended with a follow up Q2 journal publication [1].

- **SCP 2017 [2] – Q3 in 2017, but Q2 in 2016, when it was submitted.** Typed Connector Families and their semantics, José Proença, Dave Clarke, Science of Computer Programming, Volume 146, Pages 28–49.

  Overview: This work extends a conference publication [29], and reasons about families of connectors in the context of software product lines. Connectors are described by a parameterised calculus with a type system with constraints, and a prototype system infers types using integer constraint solving.

  This paper combines 2 of my core areas: coordination languages and software product lines, and represents an active research interest.

- **Formalise@ICSE 2017 [26] – IEEE proceedings.** Formal Verification of ROS-Based Robotic Applications Using Timed-Automata, Raju Halder, José Proença, Nuno Macedo, André Santos, 5th IEEE/ACM International FME Workshop on Formal Methods in Software Engineering, FormaliSE@ICSE.

  Overview: This paper models ROS' publish-subscribe mechanism using Timed-Automata, having a real Kobuki robot as case-study. It uses UPPAAL, a real-time model checker, to infer desirable parameters such as timeouts and queue sizes. My main contribution was in the modelling and verification aspects via UPPAAL.

  Google Scholar finds 30 papers citing this recent work, and reflects the application of real-time analysis to practical scenarios.

- **JISA 2016 [3] – Q2 in 2016.** Hitch Hiker 2.0: a binding model with flexible data aggregation for the Internet-of-Things, Gowri Sankar Ramachandran, José Proença, Wilfried Daniels, Mario Pickavet, Dimitri Staessens, Christophe Huygens, Wouter Joosen, Danny Hughes, Journal of Internet Services and Applications, volume 7, pages 1-15

  Overview: This work proposes an approach to create a low-priority overlay network that exploits unused payload from a higher-priority IoT distributed application.

  This paper extends an ACM SIGSOFT publication with IEEE proceedings [28], and reflects my ∼3-year collaboration within a group working on wireless sensor networks at Distrinet-KU Leuven.

It is also worth mentioning:

- I published in 2018 a paper on a teaching experience report in ICFP - a CORE A* conference, also included in this application, that is focused on the educational aspect and therefore described in Section E, but also contains some scientific results, regarding the feedback engine proposed for short runs of feedback and evaluation.

- DBLP's website counts 18 publications in the last 5 years, out of which 3 are edited proceedings, 9 are international peer-reviewed conferences/workshops, and 5 are journal publications, not including a published Q2 journal in 2021. Disregarding the proceedings, there is an average of 3.4 authors per paper, and 66.7% of these have 2 or 3 authors, which reflects the large involvement in each of my publications.

- Beside writing scientific articles I also edited 3 proceedings of workshops and conferences, 2 journal special edition (from where one was for LMCS, a Q1 journal in the year of publication, in the special issue for COORDINATION 2015), considering only the last 5 years (since 2016).

Coordination and participation in Scientific Projects

- **DaVinci** – Jul. 2018-present – **Principal Investigator** – INESCTEC: 238K€.
  Distributed Architectures: Variability and Interaction for Cyber-Physical Systems is an FCT project to analyse interactions among software components considering aspects such as real time and variability.
  It currently produced 7 conference publications, 1 master thesis, 7 talks, it was involved in the organisation of a workshop and an invited tutorial, and produced several tools available online in `http://arcatools.org`.
  `http://davinci.di.uminho.pt`

- **VALU3S** – May 2020-present – **Co-leader of ISEP** – Global: 26.1M€, ISEP: 238K€.
  Verification and Validation of Automated Systems Safety and Security is an H2020 ECSEL JU project that aims to evaluate the state-of-the-art V&V methods and tools, and design a multi-domain framework to create a clear structure around the components and elements needed to conduct the V&V process.
  `https://valu3s.eu/`

- **Reassure** – Jul. 2018-present – member – Global: 235K€, ISEP: 183K€.
  Running Secure Runtime Verification for Reliable Real-Time Embedded Software is an FCT project that proposes a novel framework for Runtime Verification of Real-Time Embedded Systems.
  `https://www.cister.isep.ipp.pt/projects/reassure/`

- **PReFECT** – Jul. 2018-2021 – member – ISEP: 237K€.
  Predictable Multiprocessor Platforms for Embedded Safety Critical Systems is an FCT project that addresses multiple challenges with respect to the introduction of multicore processors in safety-critical systems.
  `http://www.cister.isep.ipp.pt/projects/prefect/`

- **KLEE** – Jun. 2018-present – member – Global: 238K€, INESCTEC: 180K€.
  Coalgebraic Modeling and Analysis for Computational Synthetic Biology is an FCT project that aims at the design of biological systems in a systematic way, using the theory of coalgebras.
  `http://klee.di.uminho.pt`

- **LightKone** – Dec. 2016-2019 – member – Global: 3.5M€, INESCTEC: 464K€.
  Lightweight computation for networks at the edge is a **H2020 european project** aiming at investigating models for programming edge networks. An edge network is a large set of heterogeneous, loosely coupled computing nodes situated at the logical extreme of a network, including networks of Internet of Things and mobile devices. It currently produced 44 publications, 21 invited talks, and 4 events.
  `https://www.lightkone.eu/`

- **TRUST** – Sep. 2016-2019 – member.
  Trustworthy Software Design with Alloy is an FCT project that proposes to investigate lightweight approaches to verify software systems via the Alloy toolset, considering aspects such as variability of systems.
  `http://trust.di.uminho.pt`

- **EMD** – 2015-2016 – member.
  Elastic Media Distribution for Online Collaboration is an **ICON project**, Funded by iMinds and IWT (Belgium), and investigates how professional A/V systems can be integrated into corporate and public networks;
  `https://www.imec-int.com/nl/imec-icon/research-portfolio/emd`

- **TRANSITION** – 2014-2015 – member.
  From Ad-Hoc Code Development To Code Reuse Through Middleware For Networked Embedded Control Systems is an **IOF (Industrial Research Fund) project** funded by KU Leuven, targeting the collaborations between the PMA and the Distrinet groups aiming at technology transfer;
  https://distrinet.cs.kuleuven.be/research/projects/TRANSITION

- **HATS** – 2010-2013 – member – Global: 7.3M€.
  Highly Adaptable and Trustworthy Software using Formal Models is an Integrated Project supported by the 7th Framework Programme of the EC within the FET (Future and Emerging Technologies) scheme. The final report evaluated as "Excelent" the project outcome.
  http://hats-project.eu

Integration in the scientific community

Below I emphasise the key scientific events and proceedings I was involved in as a researcher, in the past 5 years.

- **Edited proceedings and journal special issues (7 volumes)**
  - *Special Issue of FACS 2017 (Journal)*, Science of Computer Programming, Elsevier, Volumes 175, 178, 179, 183, 185, 191, 196; 2020. https://www.sciencedirect.com/journal/science-of-computer-programming/special-issue/10166TH86XL
  - *5th Workshop on Formal Integrated Development Environment (F-IDE)*, Rosemary Monahan, Virgile Prevosto, José Proença (Editors), F-IDE 2019, volume 310 of Electronic Proceedings in Theoretical Computer Science, 2019. http://eptcs.web.cse.unsw.edu.au/content.cgi?FIDE2019
  - *Special Issue of COORDINATION and FORTE 2016 (Journal)*, Logical Methods in Computer Science, Episciences, Volume 13, 2017. (Q1 in 2016 under Computer Science) https://lmcs.episciences.org/volume/view/id/293
  - *International Conference on Formal Aspects of Component Software (FACS)* , José Proença, Markus Lumpe (Editors), FACS 2017, Lecture Notes in Computer Science, Volume 9686, 2016. http://dx.doi.org/10.1007/978-3-319-39519-7
  - *IFIP conference: Coordination Models and Languages* , Alberto Lluch Lafuente, José Proença (Editors), COORDINATION 2016, Lecture Notes in Computer Science, Volume 10487, 2017. https://link.springer.com/book/10.1007/978-3-319-68034-7
  - *International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems (FOCLASA)* , José Proença, Massimo Tivoli (Editors), FOCLASA 2015, Electronic Proceedings in Theoretical Computer Science, Volume 201, 2015. http://dx.doi.org/10.4204/EPTCS.201
  - *International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems (FOCLASA)* , Javier Cámara, José Proença (Editors), FOCLASA 2014, Electronic Proceedings in Theoretical Computer Science, Volume 175, 2015. http://dx.doi.org/10.4204/EPTCS.175

- **Member of Steering-Committees (7 events)**
  - **COORDINATION** – IFIP International Conference on Coordination Models and Languages (CORE A conference until 2017, Core B from 2018), for the years **2017**, **2018**, **2019**, **2020**, and **2021**.
  - **FACS** – International Conference on Formal Aspects of Component Software, for the years **2018** and **2019**.

- **Chair of Program-Committees (6 events)**
  - **F-IDE 2021**, 6th Workshop on Formal Integrated Development Environment, co-located with NASA Formal Methods 2021 conference, to be held online; co-chaired with Andrei Paskevich, from LRI and the University of Paris-Saclay; Edited proceedings will be available in Electronic Proceedings in Theoretical Computer Science (EPTCS).
  - **F-IDE 2019**, 5th Workshop on Formal Integrated Development Environment, co-located with the Formal Methods 2019 conference, to be held in Porto, Portugal; co-chaired with Rosemary Monahan, from Maynooth University, and Virgile Prevosto from the University of Paris-Saclay; Edited proceedings available in Electronic Proceedings in Theoretical Computer Science (EPTCS).

- **FACS 2017**, 14th International Conference on Formal Aspects of Component Software, held in Braga, Portugal; co-chaired with Markus Lumpe, from the Swinburne University of Technology, Australia; Edited proceedings available in Lecture Notes in Computer Science (LNCS), and a special issue is being organised for Science in Computer Programming (Elsevier Journal).
    - **COORDINATION 2016**, IFIP International Conference on Coordination Models and Languages (CORE A conference), part of the 3 DisCoTec conferences, held in Heraklion, Greece; Co-chaired with Alberto Lluch Lafuente, from the Technical University of Denmark; Edited proceedings available in Lecture Notes in Computer Science (LNCS), and a special issue is being organised for Logical Methods in Computer Science (LMCS).
    - **FOCLASA 2015**, International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems, held in Madrid, Spain; co-chaired with Massimo Tivoli, from the University of L'Aquila, Italy; Edited proceedings available in Electronic Proceedings in Theoretical Computer Science (EPTCS).
    - **FOCLASA 2014**, International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems, held in Rome, Italy; co-chaired with Javier Cámara, from Carnegie Mellon University, USA; Edited proceedings available in Electronic Proceedings in Theoretical Computer Science (EPTCS).

- Creation and management of a **research cluster Arca** (`http://arca.di.uminho.pt`) within HASLab, about Software Architecture & Design Calculi, including the organisation of periodic seminars and maintaining an up-to-date website with current research activities and outcomes.

- **Member of Program-Committees (19 events)**
    - **TACAS** – International Conference on Tools and Algorithms for the Construction and Analysis of Systems (Artifact evaluation committee member) for **2021**
    - **F-IDE** – Workshop on Formal Integrated Development Environment, for **2019** and **2021**.
    - **FSEN** – IPM International Conference on Fundamentals of Software Engineering, for the years **2015**, **2017**, **2019**, and **2021**.
    - **FACS** – International Conference on Formal Aspects of Component Software, for **2014**, **2017**, **2018**, and **2019**.
    - **FOCLASA** – International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems, for the years **2014**, **2015**, and **2018**, and **2019**.
    - **REBLS** – International Workshop on Reactive and Event-Based Languages & Systems, for **2018**.
    - **PhD-iFM** – International Conference on integrated Formal Methods – PhD Symposium on Formal Methods: Algorithms, Tools and Applications, for **2018**.
    - **AlgoSensors** – International Symposium on Algorithms and Experiments for Wireless Networks, for **2018**.
    - **COORDINATION** – IFIP International Conference on Coordination Models and Languages, for **2016** (as PC-Chair).

- **Juri in PhD defences** of the following PhD researchers:
    - Fan Yan (KU Leuven, private defence on Jan 2019);
    - Guillermina Cledou (not officially in the juri due to university rules), *A Virtual Factory for Smart City Service Integration* (U.Minho, 12 Nov 2018);

- **Juri in MSc thesis** of the following MSc projects:
    - João Almeida, *Rust-based SOME/IP implementation for robust automotive software* (FEUP-MIEIC, to defend in Feb 2021);
    - Sven Akkermans, *Supporting the Internet of Things: IPv6 multicase in publish/subscribe middleware* (KU Leuven, 2015);
    - Vincent Goossens, *Reification of monads for parser combinators* (Monadreïficatie voor Parsercombinatoren) (KU Leuven, 2015);

- **Reviewer** in the last 5 years (since 2016) for the following 38 submissions, including 13 journal submissions and 25 publications on international peer-reviewed conferences and workshops: JLAMP (Elsevier journal)'17,20; TACAS'20; FSEN'17,19,20; STTT (Springer journal)'19,20; SCP (Elsevier journal)'18,19,20; Conc.& Comp. (Wiley journal)'19,20; EBL'20;

iFM'19; FACS'18,19; FOCLASA',18,19; F-IDE'19; FORTE'17,18; SoSyM (Springer journal)'18,19; FM'16,18; REBLS'18; VORTEX'18; AlgoSensors'18; Inf. and Comp. (Elsevier journal)'18; PhD-iFM '18; JSS (Elsevier journal)'17; SEFM'17; FASE'17; COORDINATION'16; SBCAR'16; SBLP'16; ESOP'16;

Teaching projects and content

- **MSc on critical systems** (2019). MScCCSE – `http://cister-labs.pt/mscccse` – is a 2-year MSc on Critical Systems recently approved by A3ES, offered by ISEP, Porto. This MSc is aligned with CISTER's strategic plan, and counts with the support of several industrial collaborations. I was an active member in the writing of its proposal, together with other senior researchers at CISTER/ISEP, which includes modules on formal verification of critical systems and advanced programming paradigms. The edition of 2019/20 failed to start, where I was involved and responsible for these more formal modules.

- **Functional programming** (2016–2019). This is a programming introductory course for first year university students. I was involved in the development of:
  - the student assignments; and
  - an engine to provide instant feedback regarding students assignments and to evaluate automatically several aspects of these assignments, available on `https://github.com/haslab/HAAP`;
  - A hall-of-fame for the best projects since 2013, including playable links to the student's Haskell code compiled into JavaScript, available on `https://haslab.github.io/Teaching/LI1`;
  - A publication on ICFP (CORE A*) on an experience report presenting our approach and tools.
  - Overall very positive feedback from the students, who were able to acquire a vast set of skills and dedicate a large effort partially driven by the gamification aspect.

- **Software Architecture and Design Calculi** (2015-2018). This is a MSc level course on formal methods for always-running components, covering topics such as model checking, bisimulations, timed automata, and coordination models. I developed several artifacts, most available online on `http://ac1516.proenca.org`, `http://ac1617.proenca.org`, and `http://arca.di.uminho.pt/ac-1718`:
  - slides;
  - tutorials;
  - assignments; and
  - exams.

- **Cyber-Physical Computation** (ongoing – 2019/20). This is a PhD level course under the MAPi program on formal analysis of cyber-physical systems, focusing on timed and hybrid (continuous/discrete) systems. I am responsible for a module of this course covering timed-automata, where I prepared slides available online on `http://alfa.di.uminho.pt/~nevrenato/CPC.html`.

- **Mathematics for Computer Science - Qualifica IT** (17/18). This is an introductory course on logic for a requalification program from the U.Minho. I developed slides, available on `http://arca.di.uminho.pt/qit1718-mi`, and exams.

- **Other project-driven Bachelor Courses** (2011-2021). I was actively involved in the restructure of content and planning of student projects for several course units, including for the teaching content of the 8 courses mentioned above and for 9 other course units mentioned in the next section.

- **Reading club on reactive programming** (2015). I organised such a reading club while researching at KU Leuven; all content can be found online: `https://jose.proenca.org/post/reactive-programming`.

- **Supervision of MSc and PhD**. I supervised the work of 4 MSc students and of 4 PhD students. I am supervising the work of 1 MSc student and 1 PhD student. These are listed in the next section.

Teaching activities

The list below enumerates the different teaching activities where I was involved in since 2011, including supervision of students.

- **Invited Assistant Professor** to deliver part of an ongoing course on Cyber-Physical Computation for PhD students, on formal analysis of time and behavioural properties of cyber-physical systems, involving the preparation of slides and evaluation of students based on a report about a research article (`http://alfa.di.uminho.pt/~nevrenato/CPC.html`).

- **Invited Assistant Professor** in charge of lab classes of the courses:
  - *Programming Paradigms (PPROG)* in ISEP (20/21);
  - *Computer Systems (SCOMP)* in ISEP (19/20);
  - *Algorithms and Programming (APROG)* in ISEP (19/20);
  - *Functional Programming* in U.Minho (16/17 and 17/18);
  - *Laboratory of Informatics for functional programming* in U.Minho (16/17, 17/18, and 18/19);
  - *Laboratory of Informatics for imperative programming* in U.Minho (17/18);
  - *Program Calculation* in U.Minho (16/17).

- **Invited Assistant Professor** to deliver the MSc course *Arquitectura e Cálculo* (Software Architecture and Design Calculi) in U.Minho (15/16, 16/17, and 17/18), including the preparation of slides, tutorials, assignments, and exams (`https://ac1516.proenca.org`, `http://ac1617.proenca.org`, and `https://arca.di.uminho.pt/ac-1718`).

- **Invited Assistant Professor** to deliver a course for a requalification program (*Qualifica IT*) on Mathematics for Computer Science in U.Minho (17/18), including the preparation of slides, exercises, and exams (`http://arca.di.uminho.pt/qit1718-mi`)

- **Teaching Assistant** at KU Leuven; undergraduate courses:
  - Practical project with constrained devices (P&O, 13/14, 14/15).
  - Software design in object-oriented languages (SWOP, 11/12, 12/13, 13/14),
  - Comparative Programming Languages (CPL, 12/13),
  - Operating Systems (BS, 12/13),
  - Introduction to the object-oriented paradigm (OGO, 11/12),

- **Invited lectures**:
  - 2 lectures on the Comparative Programming Languages course (KU Leuven, 12/13),
  - introductory lecture on Functional Programming (Petrozavodsk State University, Russia, Nov. 2012),
  - lecture on the Reo coordination language (U.Minho, Braga, Apr. 2013).

- **Supervisor** of the following MSc theses:
  - José Matias, *DSL for a cloud infrastructure* (Univ. Porto, ongoing);
  - Rúben Cruz, *Web-based analysis of families of Reo connectors* (Univ. Minho, 2017/18);
  - Sam Gielis, *A reactive, extensible & modular Dashboard Factory for WSN monitoring* (KU Leuven, 2015);
  - Jonas Flament, *Encoding Scala with Logic* (KU Leuven, 2014);
  - Wouter Seyen, *Delta Modelling Evaluation using ABS Language* (KU Leuven, 2012);

- **Involved in the supervision** of the work carried in the PhD theses:
  - Giann Nandi (FEUP-PDEEC, ongoing)
  - Guillermina Cledou (U.Minho, defended in 2018)
  - Wilfried Daniëls (KU Leuven, defended in 2018)
  - Gowri Sankar Rang (KU Leuven, defended in 2017)
  - Radu Muschevici (KU Leuven, defended in 2013)

Organization of scientific volumes and events

I was the **general chair** and **local organizer** of the following international conference:

- **FACS 2017**, 14th International Conference on Formal Aspects of Component Software, held in Braga, Portugal.

I was the **editor** of the following proceedings and journal special issues, already mentioned in the section over my *"integration in the scientific community"*.

- *5th Workshop on Formal Integrated Development Environment (F-IDE)*, Rosemary Monahan, Virgile Prevosto, José Proença (Editors), F-IDE 2019, Electronic Proceedings in Theoretical Computer Science, to appear.

- *Special Issue of FACS 2017 (Journal)*, Science of Computer Programming, Elsevier, not yet complete. https://www.sciencedirect.com/journal/science-of-computer-programming/special-issue/10166TH86XL

- *Special Issue of COORDINATION and FORTE 2016 (Journal)*, Logical Methods in Computer Science, Episciences, Volume 13, 2017. (Q1 in 2016 under Computer Science) https://lmcs.episciences.org/volume/view/id/293

- *International Conference on Formal Aspects of Component Software (FACS)* , José Proença, Markus Lumpe (Editors), FACS 2017, Lecture Notes in Computer Science, Volume 9686, 2016. http://dx.doi.org/10.1007/978-3-319-39519-7

- *IFIP conference: Coordination Models and Languages* , Alberto Lluch Lafuente, José Proença (Editors), COORDINATION 2016, Lecture Notes in Computer Science, Volume 10487, 2017. https://link.springer.com/book/10.1007/978-3-319-68034-7

- *International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems (FOCLASA)* , José Proença, Massimo Tivoli (Editors), FOCLASA 2015, Electronic Proceedings in Theoretical Computer Science, Volume 201, 2015. http://dx.doi.org/10.4204/EPTCS.201

- *International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems (FOCLASA)* , Javier Cámara, José Proença (Editors), FOCLASA 2014, Electronic Proceedings in Theoretical Computer Science, Volume 175, 2015. http://dx.doi.org/10.4204/EPTCS.175

I also organised local seminars and invited talks, including the ones listed below.

- Invited tutorial from prof. Farhad Arbab on Interaction-Based Programming, targetting to MSc students, under the DaVinci FCT project (that I am currently leading), on May 2019. More information on http://davinci.di.uminho.pt/#dissemination.

- Created and managed a small research cluster *Arca* (http://arca.di.uminho.pt) within HASLab, about Software Architecture & Design Calculi. This included the organization of local seminars (2016–2019), opened to all scientific community, advertised in http://arca.di.uminho.pt/#events.

Technology transfer

This section compiles research activities which are more applied or with a more direct connection to industrial partners.

- *Case-study in the DaVinci project* – The industrial partner of this recent FCT project, which I'm leading, is Altreonic: a Belgium company developing software for Real Time embedded systems. I visited them in September 2018, and are on ongoing collaboration to devise orchestration mechanisms between tasks being scheduled in a real time operating system. The specific case-study consists of the analysis of the software running in the modular electric cars being built at Altreonic, the *Kurt vehicles*, including a remote steering functionality.

- *Case-study in the LightKone project* – One of the case-studies in the LightKone project was given by the German company Peer Stritzinger GmbH, consisting of a network of nodes attached to a conveyor belt in a manufacturing process. Each node interacts with RFID tags placed on products being assembled, and controls where these products should go. Furthermore, nodes share information about these tags. I formalised this use-case using a model-checker for timed-automata, reasoning about the time the building process could take.

- *Analysis and verification of WSN* – I was part of a group working on Wireless Sensor Networks in KU Leuven, Belgium, in 2013-2015. During that period, I developed algorithms and approaches to analyse and monitor wireless sensor applications, leading to several publications [27, 28, 30, 36]. The work carried at this group led to a spin-off company —VersaSense.com—providing an IoT platform for industrial facilities.

- *Participation in the TRANSITION project (2014-2015)* – This was a Belgium project carried at KU Leuven, supported by an Industrial Research Fund aiming at a closer collaboration with industrial partners. It combines efforts between the computer science department (DistriNet group) and the mechanical engineering department (PMA group), investigating how to use lightweight wireless nodes to interact and reconfigure larger robots.

- *Open-source software artefacts* – Some of my proposed concepts and methodologies are supported by a companion tool or library that realises it. These are listed below, including frameworks to verify software connectors that rely on external model checkers and constraint solvers.

TOOL
DEVELOPMENT

- **ArcaTools** – Web-based interactive framework to combine existing (independent) Reo tools [22] and tools for hybrid programming, previously known as *ReoLive*. It consists of a Scala and JavaScript implementation of a framework that provides the bridge between a browser-based IDE and a set of tools, using several widgets to provide quick feedback over the connectors or programs being build. Available at `https://github.com/ReoLanguage/ReoLive`, and usable at `http://arcatools.org`.

- **ARx** – Reactive programming language for synchronous connectors. An operational model that gives semantics to a reactive language that combines reactive programming concepts with synchronous communication aspects [17]. Available at `https://github.com/arcalab/arx`, and usable at `http://arcatools.org/#arx`. It consists of a Scala and JavaScript implementation that parses and analyses synchronous connectors written in a reactive programming style.

- **HubAutomata** – Hub Automata for coordination of tasks on a Real-Time OS: an automata model that gives semantics to connectors combining tasks on the VirtuosoNext$^{\text{TM}}$ framework [19, 1]. Available at `https://github.com/arcalab/hubAutomata`, and usable at `http://arcatools.org/#virtuoso`.

- **Lince** – Lightweight prototyping of Hybrid Programs. It uses a DSL for Hybrid Programs, and produces simulations that take advantage of symbolic computations by SageMath and of perturbation analysis using quadratic programming. Available at `https://github.com/arcalab/hybrid-programming`, and usable at `http://arcatools.org/#lince`

- **Preo** – Parameterised Reo: a concrete language for a calculus of variable connectors [2]. It consists of a Scala implementation of a set of tools to parse, compose, inspect, and visualise families of connectors based on the Reo coordination language. Available at `https://github.com/ReoLanguage/Preo`, and usable at `http://arcatools.org/#reo`.

- **HAAP** – Haskell Automated Assessment Platform [21]. It consists of a Haskell implementation of a platform used to automatically analyse and evaluate student assignments, used to teach first-year students how to program in Haskell. Available at `https://github.com/haslab/HAAP`.

- **ITFA** – Scala implementation of the Interface Featured Timed Automata [24]. It provides libraries with an embedded DSL to describe timed automata with variability, methods to provide complex composition mechanisms, and methods to export the resulting automata to the UPPAAL model checker or to different visualisers. Available at `https://github.com/haslab/ifta`.

- **PICC** – Partial Interaction Coordination Constraints [31] - an interactive Reo implementation. It consists of a Scala implementation that explores how to include constraints with side-effects when describing communication protocols, based on transactions with compensations. Available at `https://github.com/joseproenca/picc`.

LANGUAGES

Portuguese: Mother tongue
English: Excellent
Spanish: Good
French: Basic (3 years of courses)
Dutch: Basic (2 years of courses)
Russian: Basic (3 years of courses)
German: Poor (2 semesters of courses)

Porto, February 4, 2021

(José Miguel Paiva Proença)

Full list of publications, based on DBLP (http://dblp.uni-trier.de)

This list of publications includes only the peer-reviewed publications in international journals and proceedings, and does not include technical reports.

Journal publications

[1] Guillermina Cledou, José Proença, Bernhard H. C. Sputh, and Eric Verhulst. Hubs for virtuosonext: Online verification of real-time coordinators. *Science of Computer Programming, Elsevier*, 203:102566, 2021.

[2] José Proença and Dave Clarke. Typed connector families and their semantics. *Science of Computer Programming, Elsevier*, 146:28–49, 2017.

[3] Gowri Sankar Ramachandran, José Proença, Wilfried Daniels, Mario Pickavet, Dimitri Staessens, Christophe Huygens, Wouter Joosen, and Danny Hughes. Hitch hiker 2.0: a binding model with flexible data aggregation for the internet-of-things. *Journal of Internet Services and Applications, Springer*, 7(1):4:1–4:15, 2016.

[4] Sung-Shik T. Q. Jongmans, Dave Clarke, and José Proença. A procedure for splitting data-aware processes and its application to coordination. *Science of Computer Programming, Elsevier*, 115-116:47–78, 2016.

[5] Radu Muschevici, Jose Paiva Proenca, and Dave Clarke. Feature nets: behavioural modelling of software product lines. *Software and Systems Modeling (SoSyM)*, pages 1–26, Springer, June 2015.

[6] Peter Y. H. Wong, Elvira Albert, Radu Muschevici, José Proença, Jan Schäfer, and Rudolf Schlatte. The ABS tool suite: modelling, executing and analysing distributed adaptable object-oriented systems. *International Journal on Software Tools for Technology Transfer (STTT)*, Springer, 14(5):567–588, 2012.

[7] Dave Clarke, José Proença, Alexander Lazovik, and Farhad Arbab. Channel-based coordination via constraint satisfaction. *Science of Computer Programming, Elsevier*, 76(8):681–710, 2011.

Edited proceedings, journals, and books

[8] José Proença and Markus Lumpe, editors. newblock *Special Issue of FACS 2017*, volumes 175, 178, 179, 183, 185, 191, and 196 of *Science of Computer Programming*. Elsevier, 2020.

[9] Rosemary Monahan, Virgile Prevosto, and José Proença, editors. *Proceedings Fifth Workshop on Formal Integrated Development Environment, F-IDE@FM 2019, Porto, Portugal, 7th October 2019*, volume 310 of *EPTCS*, 2019.

[10] Elvira Albert, Ivan Lanese, Alberto Lluch Lafuente and José Proença, editors. newblock *Special Issue of COORDINATION and FORTE 2016*, volume 13 of *Journal of Logical Methods in Computer Science*. Episciences, 2017.

[11] José Proença and Markus Lumpe, editors. *Formal Aspects of Component Software - 14th International Conference, FACS 2017, Braga, Portugal, October 10-13, 2017, Proceedings*, volume 10487 of *Lecture Notes in Computer Science*. Springer, 2017.

[12] Alberto Lluch-Lafuente and José Proença, editors. *Coordination Models and Languages - 18th IFIP WG 6.1 International Conference, COORDINATION 2016, Held as Part of the 11th International Federated Conference on Distributed Computing Techniques, DisCoTec 2016, Heraklion, Crete, Greece, June 6-9, 2016, Proceedings*, volume 9686 of *Lecture Notes in Computer Science*. Springer, 2016.

[13] Javier Cámara and José Proença, editors. *Proceedings 13th International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems, FOCLASA 2014, Rome, Italy, 6th September 2014*, volume 175 of *Electronic Proceedings in Theoretical Computer Science*, 2015.

[14] José Proença and Massimo Tivoli, editors. *Proceedings 14th International Workshop on Foundations of Coordination Languages and Self-Adaptive Systems, FOCLASA 2015, Madrid, Spain, 5th September 2015*, volume 201 of *Electronic Proceedings in Theoretical Computer Science*, 2015.

[15] José Proença. *Synchronous Coordination of Distributed Components*. PhD thesis, FCT (Fundacao para a Ciencia e Tecnologia), grant 22485; 2005, May 2011.

Proceedings of international peer-reviewed conferences and workshops

[16] Sergey Goncharov, Renato Neves, and José Proença. Implementing hybrid semantics: From functional to imperative. In Violet Ka I Pun, Volker Stolz, and Adenilso Simão, editors, *Theoretical Aspects of Computing - ICTAC 2020 - 17th International Colloquium, Macau, China, November 30 - December 4, 2020, Proceedings*, volume 12545 of *Lecture Notes in Computer Science*, pages 262–282. Springer, 2020.

[17] José Proença and Guillermina Cledou. Arx: Reactive programming for synchronous connectors. In Simon Bliudze and Laura Bocchi, editors, *Coordination Models and Languages - 22nd IFIP WG 6.1 International Conference, COORDINATION 2020, Valletta, Malta, June 15-19, 2020, Proceedings*, volume 12134 of *Lecture Notes in Computer Science*, pages 39–56. Springer, 2020.

[18] José Proença and Alexandre Madeira. Taming hierarchical connectors. In Hossein Hojjat and Mieke Massink, editors, *Fundamentals of Software Engineering - 8th International Conference, FSEN 2019, Tehran, Iran, May 1-3, 2019, Revised Selected Papers*, volume 11761 of *Lecture Notes in Computer Science*, pages 186–193. Springer, 2019.

[19] Guillermina Cledou, José Proença, Bernhard H. C. Sputh, and Eric Verhulst. Coordination of Tasks on a Real-Time OS. In Hanne Riis Nielson and Emilio Tuosto, editors, *Coordination Models and Languages - 21st International Conference, COORDINATION 2019, Kongens Lynby, Denmark, June 17-21, 2019. Proceedings*, volume 11533 of *Lecture Notes in Computer Science*, pages 250–266. Springer, 2019.

[20] José Proença and Alexandre Madeira. Taiming Hierarchical Connectors. To appear in *FSEN*, *Lecture Notes in Computer Science*, 2019.

[21] José Bacelar Almeida, Alcino Cunha, Nuno Macedo, Hugo Pacheco, and José Proença. Teaching how to program using automated assessment and functional glossy games (experience report). In Proceedings of the ACM on Programming Languages volume 2, ICFP, article 82, 2018.

[22] Rúben Cruz and José Proença. ReoLive: Analysing Connectors in your Browser. Proceedings of the 16th International Workshop on the Foundations of Coordination Languages and Self-Adaptive Systems, FOCLASA 2018, Toulouse, volume 11176 of *Lecture Notes in Computer Science*, pages 336–350, 2018.

[23] Guillermina Cledou, José Proença, and Luís Soares Barbosa. A Refinement Relation for Families of Timed Automata. In *SBMF*, volume 10623 of *Lecture Notes in Computer Science*, pages 161–178. Springer, 2017.

[24] Guillermina Cledou, José Proença, and Luís Soares Barbosa. Composing families of timed automata. In *FSEN*, volume 10522 of *Lecture Notes in Computer Science*, pages 51–66. Springer, 2017.

[25] José Proença and Carlos Baquero. Quality-aware reactive programming for the internet of things. In *FSEN*, volume 10522 of *Lecture Notes in Computer Science*, pages 180–195. Springer, 2017.

[26] Raju Halder, José Proença, Nuno Macedo, and André Santos. Formal verification of ROS-based robotic applications using timed-automata. In *FormaliSE@ICSE*, pages 44–50. IEEE, 2017.

[27] Wilfried Daniels, José Proença, Dave Clarke, Wouter Joosen, and Danny Hughes. Refraction: Low-cost management of reflective meta-data in pervasive component-based applications. In Philippe Kruchten, Steffen Becker, and Jean-Guy Schneider, editors, *Proceedings of the 18th International ACM SIGSOFT Symposium on Component-Based Software Engineering, CBSE 2015, Montreal, QC, Canada, May 4-8, 2015*, pages 27–36. ACM, 2015.

[28] Gowri Sankar Ramachandran, Wilfried Daniels, José Proença, Sam Michiels, Wouter Joosen, Danny Hughes, and Barry Porter. Hitch hiker: A remote binding model with priority based data aggregation for wireless sensor networks. In Philippe Kruchten, Steffen Becker, and Jean-Guy Schneider, editors, *Proceedings of the 18th International ACM SIGSOFT Symposium on Component-Based Software Engineering, CBSE 2015, Montreal, QC, Canada, May 4-8, 2015*, pages 43–48. ACM, 2015.

[29] José Proença and Dave Clarke. Typed connector families. In Christiano Braga and Peter Csaba Ölveczky, editors, *Formal Aspects of Component Software - 12th International Conference, FACS 2015, Niterói, Brazil, October 14-16, 2015, Revised Selected Papers*, volume 9539 of *Lecture Notes in Computer Science*, pages 294–311. Springer, 2015.

[30] Wilfried Daniels, José Proença, Nelson Matthys, Wouter Joosen, and Danny Hughes. Tomography: lowering management overhead for distributed component-based applications. In *Proceedings of the 2nd Workshop on Middleware for Context-Aware Applications in the IoT, M4IoT@Middleware 2015, Vancouver, BC, Canada, December 7-11, 2015*, pages 13–18. ACM, 2015.

[31] José Proença and Dave Clarke. Interactive interaction constraints. In Rocco De Nicola and Christine Julien, editors, *Coordination Models and Languages, 15th International Conference, COORDINATION 2013, Held as Part of the 8th International Federated Conference on Distributed Computing Techniques, DisCoTec 2013, Florence, Italy, June 3-5, 2013. Proceedings*, volume 7890 of *Lecture Notes in Computer Science*, pages 211–225. Springer, 2013.

[32] José Proença and Dave Clarke. Data abstraction in coordination constraints. In Carlos Canal and Massimo Villari, editors, *Advances in Service-Oriented and Cloud Computing - Workshops of ESOCC 2013, Málaga, Spain, September 11-13, 2013, Revised Selected Papers*, volume 393 of *Communications in Computer and Information Science*, pages 159–173. Springer, 2013.

[33] Radu Muschevici, Dave Clarke, and José Proença. Executable modelling of dynamic software product lines in the ABS language. In Andreas Classen and Norbert Siegmund, editors, *5th International Workshop on Feature-Oriented Software Development, FOSD '13, Indianapolis, IN, USA, October 26, 2013*, pages 17–24. ACM, 2013.

[34] Dave Clarke and José Proença. Partial connector colouring. In Marjan Sirjani, editor, *Coordination Models and Languages - 14th International Conference, COORDINATION 2012, Stockholm, Sweden, June 14-15, 2012. Proceedings*, volume 7274 of *Lecture Notes in Computer Science*, pages 59–73. Springer, 2012.

[35] José Proença, Dave Clarke, Erik P. de Vink, and Farhad Arbab. Dreams: a framework for distributed synchronous coordination. In Sascha Ossowski and Paola Lecca, editors, *Proceedings of the ACM Symposium on Applied Computing, SAC 2012, Riva, Trento, Italy, March 26-30, 2012*, pages 1510–1515. ACM, 2012.

[36] Marco Patrignani, Nelson Matthys, José Proença, Danny Hughes, and Dave Clarke. Formal analysis of policies in wireless sensor network applications. In Amy L. Murphy and Vittorio Cortellessa, editors, *Third International Workshop on Software Engineering for Sensor Network Applications, SESENA 2012, 2 June 2012, Zurich, Switzerland, Proceedings*, pages 15–21. IEEE Computer Society, 2012.

[37] Sung-Shik T. Q. Jongmans, Dave Clarke, and José Proença. A procedure for splitting processes and its application to coordination. In Natallia Kokash and António Ravara, editors, *Proceedings 11th International Workshop on Foundations of Coordination Languages and Self Adaptation, FOCLASA 2012, Newcastle, U.K., September 8, 2012.*, volume 91 of *Electronic Proceedings in Theoretical Computer Science*, pages 79–96, 2012.

[38] Radu Muschevici, José Proença, and Dave Clarke. Modular modelling of software product lines with feature nets. In Gilles Barthe, Alberto Pardo, and Gerardo Schneider, editors, *Software Engineering and Formal Methods - 9th International Conference, SEFM 2011, Montevideo, Uruguay, November 14-18, 2011. Proceedings*, volume 7041 of *Lecture Notes in Computer Science*, pages 318–333. Springer, 2011.

[39] José Proença, Dave Clarke, Erik P. de Vink, and Farhad Arbab. Decoupled execution of synchronous coordination models via behavioural automata. In Mohammad Reza Mousavi and António Ravara, editors, *Proceedings 10th International Workshop on the Foundations of Coordination Languages and Software Architectures, FOCLASA 2011, Aachen, Germany, 10th September, 2011.*, volume 58 of *Electronic Proceedings in Theoretical Computer Science*, pages 65–79, 2011.

[40] Dave Clarke, Radu Muschevici, José Proença, Ina Schaefer, and Rudolf Schlatte. Variability modelling in the ABS language. In Bernhard K. Aichernig, Frank S. de Boer, and Marcello M. Bonsangue, editors, *Formal Methods for Components and Objects - 9th International Symposium, FMCO 2010, Graz, Austria, November 29 - December 1, 2010. Revised Papers*, volume 6957 of *Lecture Notes in Computer Science*, pages 204–224. Springer, 2010.

[41] Dave Clarke and José Proença. Towards a theory of views for feature models. In Goetz Botterweck, Stan Jarzabek, Tomoji Kishi, Jaejoon Lee, and Steve Livengood, editors, *Software Product Lines - 14th International Conference, SPLC 2010, Jeju Island, South Korea, September 13-17, 2010. Workshop Proceedings (Volume 2 : Workshops, Industrial Track, Doctoral Symposium, Demonstrations and Tools)*, pages 91–98. Lancaster University, 2010.

[42] Radu Muschevici, Dave Clarke, and José Proença. Feature petri nets. In Goetz Botterweck, Stan Jarzabek, Tomoji Kishi, Jaejoon Lee, and Steve Livengood, editors, *Software Product Lines - 14th International Conference, SPLC 2010, Jeju Island, South Korea, September 13-17, 2010. Workshop Proceedings (Volume 2 : Workshops, Industrial Track, Doctoral Symposium, Demonstrations and Tools)*, pages 99–106. Lancaster University, 2010.

[43] Dave Clarke, José Proença, Alexander Lazovik, and Farhad Arbab. Deconstructing Reo. *Electronic Notes in Theoretical Computer Science, Elsevier*, 229(2):43–58, 2009.

[44] Dave Clarke and José Proença. Coordination via interaction constraints I: local logic. In Filippo Bonchi, Davide Grohmann, Paola Spoletini, and Emilio Tuosto, editors, *Proceedings 2nd Interaction and Concurrency Experience: Structured Interactions, ICE 2009, Bologna, Italy, 31st August 2009.*, volume 12 of *Electronic Proceedings in Theoretical Computer Science*, pages 17–39, 2009.

[45] Farhad Arbab, Christian Koehler, Ziyan Maraikar, Young-Joo Moon, and José Proença. Modeling, testing and executing Reo connectors with the eclipse. In *Tool demo session at FACS*, 2008.

[46] Christian Koehler, David Costa, José Proença, and Farhad Arbab. Reconfiguration of Reo connectors triggered by dataflow. *ECEASST*, 10, 2008.

[47] José Proença and Dave Clarke. Coordination models Orc and Reo compared. *Electronic Notes in Theoretical Computer Science, Elsevier*, 194(4):57–76, 2008.

[48] Alcino Cunha, Jorge Sousa Pinto, and José Proença. A framework for point-free program transformation. In Andrew Butterfield, Clemens Grelck, and Frank Huch, editors, *Implementation and Application of Functional Languages, 17th International Workshop, IFL 2005, Dublin, Ireland, September 19-21, 2005, Revised Selected Papers*, volume 4015 of *Lecture Notes in Computer Science*, pages 1–18. Springer, 2005.