

João Pedro Dias



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Summary João Pedro Dias is part researcher on the thin line between hardware and software, and part Software Engineer. He has a BSc+MSc in Informatics and Computing Engineering by the Faculty of Engineering, University of Porto (FEUP). He earned his Ph.D. in Informatics Engineering from FEUP in 2022, while receiving a grant from the FCT. He maintains a Software Engineer position as a day-to-day job. Since 2017, he has been an Invited Assistant Professor at FEUP, where he teaches courses in Software Engineering, Operating Systems, among others. He has (co-)supervised +10 MSc dissertations and contributed to two public-funded projects at LIACC and INESC TEC. His research focuses on Internet-of-Things systems, software engineering, security and privacy, and his work has been published in several top-tier conferences and journals (h-index 18, i10-index 23). In his free time, he enjoys participating in Capture The Flag competitions, experimenting with Software-defined Radio, building web applications, reverse-engineering hardware, and photographing while wandering in nature.

Professional Appointments

- 2023— **Software Engineer**, Kuehne+Nagel
Porto IT Tech Hub, Porto, Portugal
- 2022— **Invited Assistant Professor**, Department of Informatics Engineering (DEI)
Faculty of Engineering, University of Porto
- 2021—2023 **Software Engineering Specialist**, BUILT CoLAB
Collaborative Laboratory for the Built Environment of the Future, Porto, Portugal
- 2017—2022 **Invited Assistant Lecturer**, Department of Informatics Engineering (DEI)
Faculty of Engineering, University of Porto
- 2017—2021 **Researcher**, Centre for Information Systems and Computer Graphics (CSIG)
Institute for Systems and Computer Engineering, Technology and Science (INESC TEC)
Porto, Portugal
- 2016—2017 **Researcher**, LIACC — Artificial Intelligence and Computer Science Laboratory
Faculty of Engineering, University of Porto
- 2015 (4 mo.) **Summer Engineering Intern**, ShiftForward, S.A. (*a.k.a.* Velocidi, Inc., acquired by Kevel)
Porto, Portugal
- 2014 (4 mo.) **IT Department Internship**, Centro Hospitalar do Tâmega e Sousa, E.P.E.
Penafiel, Porto, Portugal

Education

- 2016—2022 **Doctoral Program in Informatics Engineering — ProDEI (PhD)**
Faculty of Engineering, University of Porto, *Unanimously Approved with Distinction (Cum Laude)*.
- 2011—2016 **Integrated Masters in Informatics and Computing Engineering — MIEIC (BSc + MSc)**
Faculty of Engineering, University of Porto, *GPA: 15 out of 20*.
- 2008—2011 **Elementary School — Sciences and Technologies**
Externato de Vila Meã, Porto, Portugal, *GPA: 17 out of 20*.

Teaching

Integrated Master in Informatics and Computing Engineering (MIEIC) :: FEUP :: 5 years¹

				17/18	18/19	19/20	20/21
		Year	ECTS	Classes			
Object Oriented Programming Lab	LPOO	2	6	-	1	-	-
Operating Systems	SOPE	2	6	2	1	2	2
Software Engineering	ESOF	3	6	-	-	-	1
Software Development Lab	LDSO	4	7,5	-	1	-	-
Software Systems Architecture	ASSO	4	6	-	1	-	-

Bachelor in Informatics and Computing Engineering (L.EIC) :: FEUP :: 3 years

				21/22	22/23	23/24
		Year	ECTS	Classes		
Web Languages and Technologies	LTW	2	6	2	2	2
Operating Systems	SO	2	6	2	-	-









Master in Informatics and Computing Engineering (M.EIC) :: FEUP :: 2 years

				22/23	23/24
		Year	ECTS	Classes	
Large Scale Software Development	DS	2	6	2	2

Publications

Since 2017 I have (co-)authored **25 articles in conferences with scientific referee** and **7 articles in refereed periodics**. In total, these **31 publications** have attracted over **633 citations**, resulting in an **h-index of 17** and **i10-index of 23**². Indexation of the articles in Scopus, Web Of Science (WoS), DBLP, and CrossRef databases is represented using badges.

PEER-REVIEWED JOURNALS

8. Eduardo Ribeiro, André Restivo, Hugo Sereno Ferreira, and João Pedro Dias. “WASMICO: Micro-containers in microcontrollers with WebAssembly”. In: *Journal of Systems and Software* 214 (2024), p. 112081. ISSN: 0164-1212. DOI: <https://doi.org/10.1016/j.jss.2024.112081>    
7. João Pedro Dias Bruno Piedade and Filipe F. Correia. “Visual Notations in Container Orchestrations: An Empirical Study with Docker Compose”. In: *Software and Systems Modeling* (2022). ISSN: 1619-1374. DOI: [10.1007/s10270-022-01027-8](https://doi.org/10.1007/s10270-022-01027-8)    

¹MIEIC last edition was 20/21, then it became L.EIC + M.EIC.

²Citations and indexes were obtained by using Google Scholar, ID: [sQ2vKIoAAAAJ](https://scholar.google.com/citations?user=sQ2vKIoAAAAJ), on 31 July, 2023

6. João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “Designing and Constructing Internet-of-Things Systems: An Overview of the Ecosystem”. In: *Internet of Things* (2022). ISSN: 2542-6605. DOI: [10.1016/j.iot.2022.100529](https://doi.org/10.1016/j.iot.2022.100529) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
5. David Reis, Bruno Piedade, Filipe F. Correia, João Pedro Dias, and Ademar Aguiar. “Developing Docker and Docker-Compose Specifications: A Developers Survey”. In: *IEEE Access* (2021), pp. 1–1. DOI: [10.1109/ACCESS.2021.3137671](https://doi.org/10.1109/ACCESS.2021.3137671) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
4. André Sousa Lago, João Pedro Dias, and Hugo Sereno Ferreira. “Managing non-trivial internet-of-things systems with conversational assistants: A prototype and a feasibility experiment”. In: *Journal of Computational Science* 51 (2021), p. 101324. ISSN: 1877-7503. DOI: [10.1016/j.jocs.2021.101324](https://doi.org/10.1016/j.jocs.2021.101324) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
3. Pedro Lourenço, João Pedro Dias, Ademar Aguiar, Hugo Sereno Ferreira, and André Restivo. “Experimenting with Liveness in Cloud Infrastructure Management”. In: *Communications in Computer and Information Science* 1172 (2020). ISSN: 1865-0929. DOI: [10.1007/978-3-030-40223-5_4](https://doi.org/10.1007/978-3-030-40223-5_4) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
2. Diogo Amaral, Gil Domingues, João Pedro Dias, Hugo Sereno Ferreira, Ademar Aguiar, Rui Nóbrega, and Filipe Figueiredo Correia. “Live Software Development Environment using Virtual Reality: a Prototype and Experiment”. In: *Communications in Computer and Information Science* 1172 (2020). ISSN: 1865-0929. DOI: [10.1007/978-3-030-40223-5_5](https://doi.org/10.1007/978-3-030-40223-5_5) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
1. João Pedro Dias, Ângelo Martins, and Hugo Sereno Ferreira. “A Blockchain-based Approach for Access Control in eHealth Scenarios”. In: *Journal of Information Assurance and Security* 13 (4 2018), pp. 125–136. ISSN: 1554-1010 [WoS](#) [DBLP](#)

PEER-REVIEWED CONFERENCE PROCEEDINGS

25. Tiago Fragoso, David Silva, João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “SIMoT: A Low-fidelity Orchestrator Simulator for Task Allocation in IoT Devices”. In: *1st International Workshop on Verification & Validation of Dependable Cyber-Physical Systems part of the 53rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks*. IEEE, 2023. DOI: [10.1109/DSN-W58399.2023.00070](https://doi.org/10.1109/DSN-W58399.2023.00070)
24. Miguel Duarte, João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “Evaluation of IoT Self-healing Mechanisms using Fault-Injection in Message Brokers”. In: *2022 IEEE/ACM 4th International Workshop on Software Engineering Research Practices for the Internet of Things (SERP4IoT)*. 2022. DOI: [10.1145/3528227.3528567](https://doi.org/10.1145/3528227.3528567) [SCOPUS](#) [WoS](#) [DBLP](#)
23. João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “Empowering Visual Internet-of-Things Mashups with Self-Healing Capabilities”. In: *2021 IEEE/ACM 3rd International Workshop on Software Engineering Research Practices for the Internet of Things (SERP4IoT)*. 2021. DOI: [10.1109/SERP4IoT52556.2021.00014](https://doi.org/10.1109/SERP4IoT52556.2021.00014) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
22. Danny Soares, João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “Programming IoT-spaces: A User-Survey on Home Automation Rules”. In: *Proceedings of the 21st International Conference on Computational Science (ICCS)*. Springer, 2021. DOI: [10.1007/978-3-030-77970-2_39](https://doi.org/10.1007/978-3-030-77970-2_39) [DBLP](#) [CROSSREF](#)
21. Margarida Silva, João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “A Review on Visual Programming for Distributed Computation in IoT”. in: *Proceedings of the 21st International Conference on Computational Science (ICCS)*. Springer, 2021. DOI: [10.1007/978-3-030-77970-2_34](https://doi.org/10.1007/978-3-030-77970-2_34) [DBLP](#) [CROSSREF](#)
20. Margarida Silva, João Pedro Dias, André Restivo, and Hugo Sereno Ferreira. “Visually-defined Real-

- Time Orchestration of IoT Systems”. In: *Proceedings of the 17th International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services*. MOBIQUITOUS 2020. Online: Association for Computing Machinery, 2020. DOI: [10.1145/3448891.3448938](https://doi.org/10.1145/3448891.3448938) [WoS](#) [DBLP](#) [CROSSREF](#)
19. João Pedro Dias, Tiago Boldt Sousa, André Restivo, and Hugo Sereno Ferreira. “A Pattern-Language for Self-Healing Internet-of-Things Systems”. In: *Proceedings of the 25th European Conference on Pattern Languages of Programs*. EuroPLop 20. Irsee, Germany: Association for Computing Machinery, 2020. DOI: [10.1145/3361149.3361165](https://doi.org/10.1145/3361149.3361165) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 18. D. Torres, J. P. Dias, A. Restivo, and H. S. Ferreira. “Real-time Feedback in Node-RED for IoT Development: An Empirical Study”. In: *2020 IEEE/ACM 24th International Symposium on Distributed Simulation and Real Time Applications (DS-RT)*. 2020, pp. 1–8. DOI: [10.1109/DS-RT50469.2020.9213544](https://doi.org/10.1109/DS-RT50469.2020.9213544) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
 17. Bruno Piedade, João Pedro Dias, and Filipe F. Correia. “An Empirical Study on Visual Programming Docker Compose Configurations”. In: *Proceedings of the 23rd ACM/IEEE International Conference on Model Driven Engineering Languages and Systems: Companion Proceedings*. MODELS ’20. Virtual Event, Canada: Association for Computing Machinery, 2020. ISBN: 9781450381352. DOI: [10.1145/3417990.3420194](https://doi.org/10.1145/3417990.3420194) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 16. João Pedro Dias, Bruno Lima, João Pascoal Faria, André Restivo, and Hugo Sereno Ferreira. “Visual Self-Healing Modelling for Reliable Internet-of-Things Systems”. In: *Proceedings of the 20th International Conference on Computational Science (ICCS)*. Springer, 2020, pp. 27–36. DOI: [10.1007/978-3-030-50426-7_27](https://doi.org/10.1007/978-3-030-50426-7_27) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 15. João Pedro Dias, André Lago, and Hugo Sereno Ferreira. “Conversational Interface for Managing Non-Trivial Internet-of-Things Systems”. In: *Proceedings of the 20th International Conference on Computational Science (ICCS)*. Springer, 2020, pp. 27–36. DOI: [10.1007/978-3-030-50426-7_29](https://doi.org/10.1007/978-3-030-50426-7_29) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 14. João Pedro Dias, Hugo Sereno Ferreira, and Tiago Boldt Sousa. “Testing and Deployment Patterns for the Internet-of-Things”. In: *Proceedings of the 24th European Conference on Pattern Languages of Programs*. EuroPLop 19. Irsee, Germany: Association for Computing Machinery, 2019. ISBN: 9781450362061. DOI: [10.1145/3361149.3361165](https://doi.org/10.1145/3361149.3361165) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
 13. Ademar Aguiar, André Restivo, Filipe Figueiredo Correia, Hugo Sereno Ferreira, and João Pedro Dias. “Live Software Development: Tightening the Feedback Loops”. In: *Proceedings of the Conference Companion of the 3rd International Conference on Art, Science, and Engineering of Programming*. Programming ’19. Genova, Italy: ACM, 2019, 22:1–22:6. ISBN: 978-1-4503-6257-3. DOI: [10.1145/3328433.3328456](https://doi.org/10.1145/3328433.3328456) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 12. Pedro Lourenço, João Pedro Dias, Ademar Aguiar, and Hugo Sereno Ferreira. “CloudCity: A Live Environment for the Management of Cloud Infrastructures”. In: *Proceedings of the 14th International Conference on Evaluation of Novel Approaches to Software Engineering — Volume 1: ENASE*. INSTICC. SciTePress, 2019, pp. 27–36. ISBN: 978-989-758-375-9. DOI: [10.5220/0007699700270036](https://doi.org/10.5220/0007699700270036) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
 11. Diogo Amaral, Gil Domingues, João Pedro Dias, Hugo Sereno Ferreira, Ademar Aguiar, and Rui Nóbrega. “Live Software Development Environment for Java using Virtual Reality”. In: *Proceedings of the 14th International Conference on Evaluation of Novel Approaches to Software Engineering — Volume 1: ENASE*. INSTICC. SciTePress, 2019, pp. 37–46. ISBN: 978-989-758-375-9. DOI: [10.5220/0007699800370046](https://doi.org/10.5220/0007699800370046) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
 10. D. Pinto, João Pedro Dias, and Hugo Sereno Ferreira. “Dynamic Allocation of Serverless Functions in

- IoT Environments”. In: *2018 IEEE 16th International Conference on Embedded and Ubiquitous Computing (EUC)*. Oct. 2018, pp. 1–8. DOI: [10.1109/EUC.2018.00008](https://doi.org/10.1109/EUC.2018.00008) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
9. João Pedro Dias, F. Couto, A. C. R. Paiva, and Hugo Sereno Ferreira. “A Brief Overview of Existing Tools for Testing the Internet-of-Things”. In: *2018 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW)*. Apr. 2018, pp. 104–109. DOI: [10.1109/ICSTW.2018.00035](https://doi.org/10.1109/ICSTW.2018.00035) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
 8. João Pedro Dias, João Pascoal Faria, and Hugo Sereno Ferreira. “A Reactive and Model-Based Approach for Developing Internet-of-Things Systems”. In: *2018 11th International Conference on the Quality of Information and Communications Technology (QUATIC)*. Sept. 2018, pp. 276–281. DOI: [10.1109/QUATIC.2018.00049](https://doi.org/10.1109/QUATIC.2018.00049) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)
 7. José Pedro Pinto, João Pedro Dias, and R. J. F. Rossetti. “Growing Smart Cities on an Open-Data-Centric Cyber-Physical Platform”. In: *2018 IEEE International Smart Cities Conference (ISC2)*. Sept. 2018, pp. 1–6. DOI: [10.1109/ISC2.2018.8656989](https://doi.org/10.1109/ISC2.2018.8656989) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 6. João Pedro Dias, Hugo Sereno Ferreira, and Ângelo Martins. “A Blockchain-Based Scheme for Access Control in e-Health Scenarios”. In: *Proceedings of the Tenth International Conference on Soft Computing and Pattern Recognition (SoCPaR 2018)*. Ed. by Ana Maria Madureira, Ajith Abraham, Niketa Gandhi, Catarina Silva, and Mário Antunes. Cham: Springer International Publishing, 2020, pp. 238–247. ISBN: 978-3-030-17065-3. DOI: [10.1007/978-3-030-17065-3_24](https://doi.org/10.1007/978-3-030-17065-3_24) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 5. Guilherme Vieira Pinto, João Pedro Dias, and Hugo Sereno Ferreira. “Blockchain-Based PKI for Crowdsourced IoT Sensor Information”. In: *Proceedings of the Tenth International Conference on Soft Computing and Pattern Recognition (SoCPaR 2018)*. Ed. by Ana Maria Madureira, Ajith Abraham, Niketa Gandhi, Catarina Silva, and Mário Antunes. Cham: Springer International Publishing, 2020, pp. 248–257. DOI: [10.1007/978-3-030-17065-3_25](https://doi.org/10.1007/978-3-030-17065-3_25) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 4. Antonio Ramadas, Gil Domingues, João Pedro Dias, Ademar Aguiar, and Hugo Sereno Ferreira. “Patterns for Things that Fail”. In: *Proceedings of the 24th Conference on Pattern Languages of Programs*. PLOP ’17. ACM - Association for Computing Machinery, 2017
 3. João Pedro Dias, José Pedro Pinto, and José Magalhães Cruz. “A Hands-on Approach on Botnets for Behavior Exploration”. In: *Proceedings of the 2nd International Conference on Internet of Things, Big Data and Security*. SCITEPRESS - Science and Technology Publications, 2017, pp. 463–469. ISBN: 978-989-758-245-5. DOI: [10.5220/0006392404630469](https://doi.org/10.5220/0006392404630469) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 2. Duarte Duarte, Hugo Sereno Ferreira, João Pedro Dias, and Zafeiris Kokkinogenis. “Towards a Framework for Agent-Based Simulation of User behavior in E-Commerce Context”. In: *Trends in Cyber-Physical Multi-Agent Systems. The PAAMS Collection - 15th International Conference, PAAMS 2017*. Cham: Springer International Publishing, 2018, pp. 30–38. ISBN: 978-3-319-61578-3. DOI: [10.1007/978-3-319-61578-3_3](https://doi.org/10.1007/978-3-319-61578-3_3) [SCOPUS](#) [DBLP](#) [CROSSREF](#)
 1. João Pedro Dias and Hugo Sereno Ferreira. “Automating the Extraction of Static Content and Dynamic behavior from e-Commerce Websites”. In: *Procedia Computer Science* 109 (2017). 8th International Conference on Ambient Systems, Networks and Technologies, ANT-2017 and the 7th International Conference on Sustainable Energy Information Technology, SEIT 2017, 16-19 May 2017, Madeira, Portugal, pp. 297–304. ISSN: 1877-0509. DOI: [10.1016/j.procs.2017.05.355](https://doi.org/10.1016/j.procs.2017.05.355) [SCOPUS](#) [WoS](#) [DBLP](#) [CROSSREF](#)

INFORMAL PUBLICATIONS & OTHERS

4. Bruno Piedade, David Reis, João Pedro Dias, Filipe Correia, and Ademar Aguiar. “Container and Orchestration Specifications: A Survey on Current Practices and Challenges”. Onsite Research Track.

2020. URL: <https://www.agilealliance.org/xp2020/xp-2020-online-program/onsite-research-track/>
3. Filipa Barros, Luis Sousa, João Pedro Dias, and Hugo Sereno Ferreira. “A Preliminary Study on Mesh Networks and IoT”. in: *Book of Abstracts of the 11th Meeting of Young Researchers of University of Porto (IJUP 2018)* (2018)
 2. João Pedro Dias and Hugo Sereno Ferreira. “Automating the Extraction of Static Content and Dynamic behavior from e-Commerce Websites”. In: *Book of Abstracts of the 10th Meeting of Young Researchers of University of Porto (IJUP 2017)* (2017)
 1. João Pedro Dias, José Pedro Pinto, and José Magalhães Cruz. “A hands-on approach on botnets for a learning purpose”. In: *Book of Abstracts of the 9th Meeting of Young Researchers of University of Porto (IJUP 2016)* (2016)

PREPRINTS

1. Andreia Rodrigues, Jose Pedro Silva, João Pedro Dias, and Hugo Sereno Ferreira. “Multi-Approach Debugging of Industrial IoT Workflows”. In: *CoRR abs/2009.05828* (2020). arXiv: [2009.05828](https://arxiv.org/abs/2009.05828). URL: <https://arxiv.org/abs/2009.05828>

DISSERTATIONS

- 2022 João Pedro Dias. “Increasing the Dependability of Internet-of-Things Systems in the context of End-User Development Environments”. Doctoral Thesis, Faculty of Engineering, University of Porto, Supervised by Hugo Sereno Ferreira and João Pascoal Faria. 2022. URL: <http://hdl.handle.net/10216/140853>
- 2016 João Pedro Dias. “Reverse Engineering Static Content and Dynamic behavior of E-Commerce Sites for Fun and Profit”. Master’s Dissertation, Faculty of Engineering, University of Porto, Supervised by Hugo Sereno Ferreira. 2016. URL: <http://hdl.handle.net/10216/85374>

Educational Activities

Since 2016, I have been (co-)supervisor of **+10 M.Sc. dissertations** and of **6 B.Sc. capstone projects**. Most of my (co-)supervisions consist of students of the Informatics and Computation Engineering degree by Faculty of Engineering, University of Porto, with several collaborations with colleagues as main or co-supervisor. Most of these supervisions are pursued in an academic context (*i.e.*, within the institution that confers the degree). Others took place at companies/external institutions, including: Critical Manufacturing, Smartex.ai, DevScope, and BUILT CoLAB.

MASTER’S DISSERTATION SUPERVISIONS

13. *Incremental Load Test on Event-Driven Architectures with Structured Data* by Ângela Coelho (2023–). Co-supervisor: António Sernadas, MSc (Kuehne-Nagel). Faculty of Engineering, University of Porto.
12. *AsyncAPI-First Design for Event-Driven Architectures: Improve Developer Experience* by José Silva (2023–). Co-supervisor: António Sernadas, MSc (Kuehne-Nagel). Faculty of Engineering, University of Porto.
11. *Adopting Continuous Deployment of WebAssembly Applications in Internet-of-Things Systems* by Joel Fernandes (2023–). Co-supervisor: André Restivo, PhD. Faculty of Engineering, University of Porto.

10. *Leveraging Context-awareness in IoT Systems: An Approach with Voice Assistants* by Daniel Gonçalves (2022–2023). Co-supervisor: André Restivo, PhD. Faculty of Engineering, University of Porto.
9. *Adopting Containers in Microcontrollers for the IoT* by Xavier Pisco (2022–2023). Co-supervisor: André Restivo, PhD. Faculty of Engineering, University of Porto.
8. *Privacy-aware Rule Conflict Prediction in Home Automation* by Pedro Ponte (2022–2023). Main-supervisor: André Restivo, PhD. Faculty of Engineering, University of Porto.
7. *Micro-containerization in Microcontrollers for the IoT* by Eduardo Ribeiro (2021–2022). *handle: 10216/142728*. Co-supervisor: Hugo Sereno Ferreira, PhD. Faculty of Engineering, University of Porto.
6. *MQTT Chaos Engineering for Self-Healing IoT Systems* by Miguel Duarte (2020–2021), *ref.: 10216/135470*. Main supervisor: André Restivo, PhD. Faculty of Engineering, University of Porto.
5. *Visual Programming Language for Orchestration with Docker* by Bruno Piedade (2019–2020), *ref.: 10216/128974*. Main supervisor: Filipe Correia, PhD. Faculty of Engineering, University of Porto.
4. *Implementing a Multi-Approach Debugging of Industrial IoT Workflows* by Andreia Rodrigues (2018–2019), *ref.: 10216/122773*. Main supervisor: Hugo Sereno Ferreira, PhD; Collaboration with **Critical Manufacturing**. Faculty of Engineering, University of Porto.
3. *Dynamic Allocation of Serverless Functions in IoT Environments* by Duarte Pinto (2017–2018), *ref.: 10216/114149*. Main supervisor: Hugo Sereno Ferreira, PhD. Faculty of Engineering, University of Porto.
2. *Blockchain as a PKI for Ownership Control of IoT Devices* by Guilherme Pinto (2017–2018), *ref.: 10216/114144*. Main supervisor: Hugo Sereno Ferreira, PhD. Faculty of Engineering, University of Porto.
1. *Interoperability In Software Applications For Smart Cities: Towards A Reference Architecture* by José Pedro Pinto (2016–2017), *ref.: 10216/107529*. Main supervisor: Rosaldo Rossetti, PhD. Faculty of Engineering, University of Porto.

BACHELOR'S CAPSTONE PROJECT SUPERVISIONS

7. *IoT-based Real-Time Helpdesk Occupation Status V2.0*. Co-supervisor: João Paiva Cardoso. André Costa, Fábio Sá, Lourenço Gonçalves, Marcos Pinto. *Group Project* (2022–2023). Faculty of Engineering, University of Porto.
6. *Hardware Simulation to Assist Software Development for the Textile Industry*. Sérgio Estêvão, *Individual Internship* at **Smartex.ai** (2021–2022). Faculty of Engineering, University of Porto.
5. *Research Project Management as Scrum Master in the DevScope Academy*. João Baltazar, *Individual Internship* at **DevScope** (2021–2022). Faculty of Engineering, University of Porto.
4. *Multi-purpose License Manager*. Daniel Gonçalves, Isla Cassamo, André Malheiro, *Group Project* in collaboration with **BUILT CoLAB** (2021–2022). Faculty of Engineering, University of Porto.
3. *IoT-based Real-Time Helpdesk Occupation Status*. Main supervisor: João Paiva Cardoso, PhD. João Pinho, Pedro Santos, Tiago Gonçalves, Diogo Vale, *Group Project* (2021–2022). Faculty of Engineering, University of Porto.
2. *IoT-enhanced HMI — Embedded Mouse*. Main supervisor: Pedro Diniz, PhD. Bruno Mendes, José Costa, David Preda, Fernando Rego, *Group Project* (2021–2022). Faculty of Engineering, University of Porto.
1. *Ubiquitous Sensing — Sensing, Storing and Processing Plant Sensor Data*. Main supervisor: Pedro Diniz, PhD. Nuno Alves, Miguel Amorim, Mário Travassos, Ricardo Ferreira, *Group Project* (2021–2022). Faculty of Engineering, University of Porto.

Invited Talks, Presentations & Workshops

Slides and abstracts for most of the presentations are available at jpdias.me/talks.

- 2024 “Securing the Cloud Principles, Patterns, and Tales from the Battlefield”. Kuehne+Nagel Porto IT Hub DevOps Community. 2024
- 2023 “AsyncAPI For Platform Self-Service: A GitOps Tale”. AsyncAPI on Tour Conference, Paris Edition / APIDays Paris – “Software and APIs for Smart, Sustainable and Sovereign Societies”. 2023. URL: <https://www.apidays.global/paris/>
 “How to make buildings intelligent in a sustainable, affordable and scalable way”. Energy Efficient Buildings Workshop by PTPC Energy Efficient Buildings Committee. 2023. URL: <https://www.ptpc.pt/en/home-en/>
 “The S in IoT stands for Security: An overview on the Devices, Protocols, Architectures, and Security Threats of the Internet-of-Things Ecosystem”. “Project and Seminars” of the Information Security, Cybersecurity and Privacy Postgraduate Course at Instituto Superior de Engenharia do Porto (ISEP). 2023. URL: <https://isep.ipp.pt/Course/Course/464>
- 2021 “Internet-of-cheap-Things: A Beginners Guide to the Internet and ESP8266 (Workshop)”. Semana de Informática (SINF), NIAEFEUP, FEUP. 2021. URL: <https://www.sinf.pt/>
 “Internet-of-Things: Surviving the Chaos by Expecting It”. Update 2021, NuCC, FCUP (Online). 2021. URL: <https://nucc.dcc.fc.up.pt/update2021/>
- 2020 “From the Cloud to the Fog and the Mist: A Workshop on the Internet-of-Things (Workshop)”. EU Code Week 2020 by IEEE UP Student Branch (Local Organizer). 2020. URL: <https://codeweek.eu/>
- 2019 “Internet-of-broken-Things: A highly-opinionated overview”. oxOPOSEC Meetup. 2019. URL: <https://www.meetup.com/0xOPOSEC/>
 “Unravelling the Web of Things: Exploring Mozilla Things Framework (Workshop)”. Pixels Camp v3.0 by Bright Pixel. 2019. URL: <https://pixels.camp>
- 2017 “PiHeadquarters or How to Take Control of your House with Raspberry Pi and Docker (Workshop)”. Pixels Camp v2.0 by Bright Pixel. 2017. URL: <https://pixels.camp>
- 2016 “A hands-on approach on botnets for a learning purpose”. oxOPOSEC Meetup. 2016. URL: <https://www.meetup.com/0xOPOSEC/>
- 2015 “How To Create Your First Personal Webpage”. SHARE World Seminar 2015 – “Europe vs. Asia: Grass Is Always Greener On The Other Side”. 2015. URL: <http://www.share-share.org/world-seminar/>

Academic Service & Affiliations

Since 2017, I have participated as a reviewer³ in **7 periodics** and **7 international conferences**. I also have been member of **11 committees** of international and national conferences, and have been a volunteer at 3 different scientific events.

REVIEWER FOR INTERNATIONAL CONFERENCES

- **IEEE** International Smart Cities Conference 2021 (IEEE ISC2 2021) (1× Full Paper)

³All reviews are verified on Web of Science: [wos/O-4128-2018](https://www.webofscience.com/wos/O-4128-2018).

- 2nd International Conference on Artificial Intelligence, Information Processing and Cloud Computing (AIIPCC 2021) (1× Full Paper)
- 4th International Conference on Computer Science and Application Engineering (CSAE 2020) (1× Full Paper)
- **IEEE** International Symposium on Personal, Indoor and Mobile Radio Communications (IEEE PIMRC 2019) (1× Full Paper)
- **IEEE** Intelligent Vehicles Symposium (IEEE IV 2017) (1× Full Paper)
- **IEEE** Summer School on Smart Cities (IEEE S3C 2017) (2× Full Papers, 1× Short Paper)
- **IEEE** 20th International Conference on Intelligent Transportation Systems (IEEE ITSC 2017) (2× Full Paper)

REVIEWER FOR INTERNATIONAL SCIENTIFIC JOURNALS

- **ACM** Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (1×)
- **IEEE** Access (1×)
- **IEEE** Internet of Things Journal (1×)
- **ELSEVIER** Journal of Information Security and Applications (4×)
- **SPRINGER** Soft Computing (1×)
- **SPRINGER** Journal of Grid Computing (1×)
- **TAYLOR AND FRANCIS** Journal of Experimental & Theoretical Artificial Intelligence (1×)
- **TAYLOR AND FRANCIS** International Journal of Human-Computer Interaction (1×)
- **MDPI** Journal of Cybersecurity and Privacy (1×)
- **MDPI** Electronics (1×)
- **MDPI** Symmetry (1×)
- **OXFORD** Interacting with Computers: Interdisciplinary Journal of Human-Computer Interaction (1×)
- **ITB** Journal of ICT Research and Applications (1×)

MEMBER OF COMMITTEES

- 2023 **Program Committee Member**, ICSOFT — International Conference on Software Technologies, 18th Edition
Organizing Committee, 5th International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT 2023), co-located with the 44th ACM/IEEE International Conference on Software Engineering (ICSE 2023)
- 2022 **Publicity Chair**, 4th International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT 2022), co-located with the 44th ACM/IEEE International Conference on Software Engineering (ICSE 2022)
- 2019 **Track Co-Chair**, Symposium on Informatics Engineering, part of the 3rd Doctoral Congress Engineering (DCE19), Faculty of Engineering, University of Porto
Program Committee Member, Talk a Bit — Student Organized Tech Conference, 7th Edition
- 2018 **Makerspace Chair**, 19th International Conference on Agile Software Development (XP 2018)
Conference Organization Chair, 13th Doctoral Symposium in Informatics Engineering (DSIE'18)
Advisor Board Member, Talk a Bit — Student Organized Tech Conference, 6th Edition
- 2017 **Program Committee Member**, 2017 IEEE 1st Summer School on Smart Cities (IEEE S3C 2017)

Web Communication Co-chair, The Second ACM International Workshop on Smart, Autonomous, and Connected Vehicular Systems and Services (ACM CarSys 2017), part of the The 23rd Annual International Conference on Mobile Computing and Networking (MobiCom 2017)

Advisor Board Member, Talk a Bit — Student Organized Tech Conference, 5th Edition (2017)

2016 **Conference Chair**, Talk a Bit — Student Organized Tech Conference, 4th Edition (2016)

Web Communication Co-chair, 2016 IEEE 19th International Conference on Intelligent Transportation Systems (ITSC 2016)

VOLUNTEER ACTIVITIES

2017 **Student Volunteer (Media Coverage)**, 18th EPIA Conference on Artificial Intelligence (EPIA 2017), Porto, Portugal

2014 **Student Volunteer**, Inter-University Programming Marathon (MIUP 2014), Porto, Portugal

Student Volunteer, INForum - Symposium on Informatics (INForum 2014), Porto, Portugal

AFFILIATIONS

2017– **Software Engineering Group** at the Department of Informatics Engineering, Faculty of Engineering, University of Porto.

2017– **Institute for Systems and Technologies of Information, Control and Communication** (INSTICC).

2019–2020 **Association for Computing Machinery** (ACM), Student Membership.

2013–2018 **Institute of Electrical and Electronics Engineers** (IEEE), Student Membership as part of the University of Porto Student Branch (IEEE UP SB).

Grants, Honors & Awards

GRANTS

2019–2021 **PhD Scholarship**, by FCT — Fundação para a Ciência e a Tecnologia (Portuguese Foundation for Science and Technology), *ref.* SFRH/BD/144612/2019, 2 years.

2017–2018 **NanoSTIMA — Macro-to-Nano Human Sensing: Towards Integrated Multimodal Health Monitoring and Analytics** at INESC TEC, *ref.* NORTE-01-0145-FEDER-000016, 12 months, nanostima.inesctec.pt

2016–2017 **PEDDIR DEMO: Weight in Motion and Wheels Defect Detection (Sistema de Pesagem Dinâmica e Detecção de Irregularidades dos Rodados)** at LIACC, *ref.* NORTE-01-0247-FEDER-006397, 6 months, peddir.eu

INTERNATIONAL HONORS & AWARDS

2017 **427th (of 3350)**, IEEEExtreme — 24h Programming Competition 11.0, ieee.org/xtreme (Online)

847th (of 2815), Google Hash Code 2017, hashcode.withgoogle.com (Online)

2015 **189th (of 2477)**, IEEEExtreme — 24h Programming Competition 9.0, ieee.org/xtreme (Online)

2014 **Honorable Mention**, IEEEemadC — IEEE Mobile Application Dev. Contest, ieeemadc.org (Online)

- 2013 **126th (of 2570)**, IEEEExtreme — 24h Programming Competition 7.0, ieee.org/xtreme (Online)
2nd Place at European Final (1st at Local and National rounds), European BEST Engineering Competition, ebec.best.eu.org, Warsaw, Poland.

DOMESTIC HONORS & AWARDS

- 2022 **11th (of 109 Participants)**, Portuguese Cybersecurity Competition by hackrocks, cyberpt.hackrocks.com. Online (Portugal).
- 2021 **7th (of 372 Teams)**, Portuguese Stage of the 2021 MetaRed CTF Championship by RCTS-FCCN (FCT Portugal) and Metared, cert.rcts.pt. Online (Portugal).
- 2020 **6th (of 51 Teams)**, CIBER PERSEU 2020 Portuguese Army Exercise — Capture The Flag component by iHackLabs & exercito.pt. Online (Portugal).
9th (of 209 Teams), Portuguese Stage of the 2020 MetaRed CTF Championship by RCTS-FCCN (FCT Portugal) and Metared, cert.rcts.pt. Online (Portugal).
3th (of 6 Teams), Capture The Flag by BSidesPorto, bsidesporto.com. Online (Portugal).
- 2018 **6th (of 31 Participants)**, CIBER PERSEU 2018 Portuguese Army Exercise — Capture The Flag component by diateam & exercito.pt. Portuguese Military Academy, Lisbon, Portugal.
- 2011 **1st Place**, PmatE Mat12 — Mathematics Competition, pmate.ua.pt. University of Aveiro, Portugal.
- 2009 **2nd Place**, PmatE Fis12 — Physics Competition, pmate.ua.pt. University of Aveiro, Portugal.

Additional Training

- 2024 **Terraform Associate (003)** by HashiCorp Certified (Online with Proctored Exam)
- 2022 **Redis Certified Developer**, with completion of the modules *Introduction to Redis Data Structures (RU101)*, *Redis Streams (RU202)*, *Redis Security (RU330)*, by Redis University (Online)
- 2020 **Introduction to Reverse Engineering with Ghidra** by Matthew Alt of Voidstar Security, 4-hours training, Hackaday-U (Online)
Autopsy Basics and Hands On by Brian Carrier, 8-hours training, Basis Technology Corp. (Online)
Practical Ethical Hacking - The Complete Course by Heath Adams, 24.5-hours training, TCM Security, Inc., Udemy (Online)
Python for Penetration Testers by Cristi Zot, 2-hours training, Udemy (Online)
- 2018 **1st UPTEC School on the Future of Computing**, 1-week training, UPTEC Science and Technology Park of University of Porto
- 2017 **CyberTalk: Security - Business Enablement**, 4-hours training, Multicert Electronic Certification Services, S.A.
Project Management, 12-hours training, ERASMUS+ Mobility for teaching at Faculty of Engineering, University of Porto
- 2016 **AWS Technical Essentials Online**, 1-day training, Amazon Web Services Training and Certification
- 2015 **Practical Workshop in Agile Project Management**, 4-hours training, Strongstep - Innovation in Software Quality
CERN Spring Campus, 1-week training, CERN - European Organization for Nuclear Research

2014 **M101JS: MongoDB for Node.js Developers**, 25-hours training, MongoDB University (Online)

Prototypes

The prototypes are released under open-source licences, most of them being available through my Github profile: github.com/jpdias.

- 2022— **Stateless Home Automation Dashboard Generation Tool**, github.com/BUILT-CoLAB/mqttdash
A simple codegen tool for developing single-page dashboards using MQTT-over-Websockets.
- Software License Manager and Verification API**, github.com/BUILT-CoLAB/license-key-manager
A Flask-based (Python) platform to manage software licenses with an API for license verification.
- 2019— **Self-Healing Extensions for Node-RED**, github.com/jpdias/node-red-contrib-self-healing
A collection of self-healing nodes to the Node-RED development environment.
- 2016–2017 **Botnet-Lab**, github.com/jpdias/botnet-lab
An IRC based tool for testing the capabilities of a botnet written in Python 2.7.
- 2016 **Portfolio-Photo**, github.com/jpdias/portfolio-photo
An YAML and Jekyll (Ruby) dynamically generated photography portfolio using the Flickr API.
- 2015 **Deploy Logger Service (Codename Malamute)**, github.com/ShiftForward/malamute
Application and integration API built for documenting and record the release of new versions of projects (deploys) and its modules. Developed during the summer internship at ShiftForward.
- 2014–2015 **Turing Machine**, github.com/jpdias/TuringMachine
A web-based Turing Machine with a pre-defined language, parser, and interpretation capabilities.

Pro-Bono & Other Activities

ACADEMIC

- 2013–2015 **Executive Committee Member (Secretary)**, IEEE University of Porto Student Branch
Organization of several technical workshops and other events including *IEEE Day*, *IEEEExtreme* and *IEEEmadC*.

HUMANITARIAN

- 2013–2015 **Founder Member**, *Luz da Vida* Youth Group
Organization of activities on behalf of the village community (Travanca, Amarante, Portugal).

HOBBIES

- 2016–2017 **Football Player**, Grupo Desportivo e Recreativo de Travanca
F.A.D.A. Amateur League, Amarante, Porto, Portugal
- 2008— **Amateur Photographer** — Wildlife, Landscapes and Travel
 - Winner of the quest *Landscapes from Above*, promoted by 500px, 500px.com/quests/1000000106, 2020
 - One of the 50 best pictures of *#MySocialEurope* photo competition - *How should the Future of social Europe look like?*, promoted by the European Commission, 2019
 - Finalist at the *Norte Multimédia Contest - Photography Category*, promoted by the Norte Portugal Regional Coordination and Development Commission (CCDR-N), exposed at Trindade Metro Station

(Porto), 2018

- *Finalist at the PORTUGAL NUM ISQUEIRO BIC Contest*, promoted by the I Love My BIC initiative by BIC Portugal, 2018

- *Exposition at Movimento d'Artes*, promoted by the Cooperativa Cultural Vinha das Artes, 2010

Languages

Portuguese	Native
English	B Level (Self-Evaluation)