

# 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 +5 MSc dissertations and contributed to two 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 17, 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 years<sup>1</sup>

				<sup>17</sup> / <sub>18</sub>	<sup>18</sup> / <sub>19</sub>	<sup>19</sup> / <sub>20</sub>	<sup>20</sup> / <sub>21</sub>
	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

				<sup>21</sup> / <sub>22</sub>	<sup>22</sup> / <sub>23</sub>	<sup>23</sup> / <sub>24</sub>
	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

				<sup>22</sup> / <sub>23</sub>	<sup>23</sup> / <sub>24</sub>
	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**<sup>2</sup>. Indexation of the articles in Scopus, Web Of Science (WoS), DBLP, and CrossRef databases is represented using badges.

#### PEER-REVIEWED JOURNALS

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)    
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)    

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













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

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](#) [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](#) [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](#) [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](#) [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](#)
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](#) [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](#) [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](#) [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](#) [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](#) [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)    
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)    
  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)   
  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)   
  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)   
  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)   
  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)   
  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)    

#### 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

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 [speakerdeck.com/jpdias](https://speakerdeck.com/jpdias).

- 2023 “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/>
- 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 reviewer<sup>3</sup> 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)
- 2<sup>nd</sup> International Conference on Artificial Intelligence, Information Processing and Cloud Computing (AIIPCC 2021) (1× Full Paper)
- 4<sup>th</sup> 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** 20<sup>th</sup> 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×)

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



- **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**, ICISOFT — International Conference on Software Technologies, 18<sup>th</sup> Edition
- Organizing Committee**, 5<sup>th</sup> International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT 2023), co-located with the 44<sup>th</sup> ACM/IEEE International Conference on Software Engineering (ICSE 2023)
- 2022 **Publicity Chair**, 4<sup>th</sup> International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT 2022), co-located with the 44<sup>th</sup> ACM/IEEE International Conference on Software Engineering (ICSE 2022)
- 2019 **Track Co-Chair**, Symposium on Informatics Engineering, part of the 3<sup>rd</sup> Doctoral Congress Engineering (DCE19), Faculty of Engineering, University of Porto
- Program Committee Member**, Talk a Bit — Student Organized Tech Conference, 7<sup>th</sup> Edition
- 2018 **Makerspace Chair**, 19<sup>th</sup> International Conference on Agile Software Development (XP 2018)
- Conference Organization Chair**, 13<sup>th</sup> Doctoral Symposium in Informatics Engineering (DSIE'18)
- Advisor Board Member**, Talk a Bit — Student Organized Tech Conference, 6<sup>th</sup> Edition
- 2017 **Program Committee Member**, 2017 IEEE 1<sup>st</sup> 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 23<sup>rd</sup> Annual International Conference on Mobile Computing and Networking (MobiCom 2017)
- Advisor Board Member**, Talk a Bit — Student Organized Tech Conference, 5<sup>th</sup> Edition (2017)
- 2016 **Conference Chair**, Talk a Bit — Student Organized Tech Conference, 4<sup>th</sup> Edition (2016)
- Web Communication Co-chair**, 2016 IEEE 19<sup>th</sup> International Conference on Intelligent Transportation Systems (ITSC 2016)

#### VOLUNTEER ACTIVITIES

- 2017 **Student Volunteer (Media Coverage)**, 18<sup>th</sup> 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](https://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](https://peddir.eu)

### INTERNATIONAL HONORS & AWARDS

- 2017 **427<sup>th</sup> (of 3350)**, IEEEExtreme — 24h Programming Competition 11.0, [ieee.org/xtreme](https://ieee.org/xtreme) (Online)
- 847<sup>th</sup> (of 2815)**, Google Hash Code 2017, [hashcode.withgoogle.com](https://hashcode.withgoogle.com) (Online)
- 2015 **189<sup>th</sup> (of 2477)**, IEEEExtreme — 24h Programming Competition 9.0, [ieee.org/xtreme](https://ieee.org/xtreme) (Online)
- 2014 **Honorable Mention**, IEEEemadC — IEEE Mobile Application Dev. Contest, [ieeemadc.org](https://ieeemadc.org) (Online)
- 2013 **126<sup>th</sup> (of 2570)**, IEEEExtreme — 24h Programming Competition 7.0, [ieee.org/xtreme](https://ieee.org/xtreme) (Online)
- 2<sup>nd</sup> Place** at European Final (1<sup>st</sup> at Local and National rounds), European BEST Engineering Competition, [ebec.best.eu.org](https://ebec.best.eu.org), Warsaw, Poland.

### DOMESTIC HONORS & AWARDS

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

## Additional Training

- 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 **1<sup>st</sup> 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](https://github.com/jpdias).

- 2022— **Stateless Home Automation Dashboard Generation Tool**, [github.com/BUILT-CoLAB/mqttdash](https://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](https://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](https://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](https://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](https://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](https://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](https://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*, *IEEE Xtreme* 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](https://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)