

João Pedro Pavia

Assistant Professor at Iscte – University Institute of Lisbon

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Profile

João Pedro Calado Barradas Branco Pavia received his PhD in Information Science and Technology in 2022 and is currently Assistant Professor in the Department of Digital Technologies of the School of Applied Digital Technologies at Iscte – University Institute of Lisbon.

He teaches courses related to computer networks, information security and artificial intelligence, at both the Lisbon and Sintra campuses.

He is a member of IEEE and of COST (European Cooperation in Science and Technology), where he collaborates with professionals from several countries on intelligent radio communications for seamless inclusive interactions. Another of his collaborations concerns physical-layer security solutions for trustworthy and resilient 6G systems.

He has been involved as local organizer and reviewer in several conferences and symposia, and is also a reviewer for several journals in information science and technology.

Professional Experience

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|----------------------------|--|
| Sep 2023 – present | Assistant Professor
<i>Iscte – University Institute of Lisbon</i>
Lecturing courses on computer networks, cybersecurity, distributed systems, database security and operating systems in the Department of Digital Technologies of the School of Applied Digital Technologies. Coordination of the Bachelor Degree in Digital Technologies and Information Security. Development of the computer networks and cybersecurity laboratories. |
| Oct 2019 – present | Researcher
<i>Instituto de Telecomunicações</i>
Research on telecommunications, cybersecurity, machine learning and big data. Supervision of master and PhD dissertations. |
| Sep 2023 – Jun 2026 | Researcher
<i>Centro de Investigação em Ciências da Informação, Tecnologias e Arquitetura (ISTAR)</i>
Research on cybersecurity, machine learning and big data. Supervision of master and PhD dissertations. |
| Sep 2022 – Dec 2023 | Researcher
<i>Centro de Investigação em Computação Centrada nas Pessoas e Cognição (COPELABS)</i>
Research on telecommunications, wireless sensor networks, cybersecurity, machine learning and big data. Team member of the EU-funded project REMARKABLE (Rural Environmental Monitoring via ultra wide-ARea networkS And distriButed federated Learning). |
| Sep 2022 – Aug 2023 | Assistant Professor
<i>Universidade Lusófona</i>
Lecturing courses on telecommunications, computer networks, electronics and operating systems in the bachelor degrees of the School of Communication, Architecture, Arts and Information Technology. Supervision of bachelor degree projects. Promotion and supervision of the department's computer networks and electronics laboratories. |
| Feb 2021 – Jul 2022 | Teaching Assistant
<i>Instituto Politécnico da Lusofonia</i>
Theoretical-practical classes in Wargaming and in Telecommunications Fundamentals and Automation. Design of new professional higher technical courses, post-graduations and the first bachelor degree in Computer Engineering and Applications of the School of Engineering and Technologies. |

- Feb 2019 – Jul 2020** **Teaching Assistant**
Universidade Lusófona
 Practical and laboratory classes in Physics for the bachelor degree in Electrotechnical Engineering of the Faculty of Engineering. Teaching of MATLAB programming.
- Jan 2018 – Sep 2019** **Research Assistant**
Instituto de Telecomunicações
 Simulation and implementation of GDD structures for detection of THz radiation under the project [GDD-THZ](#) (TUBITAK/0002/2014).
- Sep 2015 – Jul 2018** **Teaching Assistant**
Iscte – University Institute of Lisbon
 Tutorial classes in Calculus II, Propagation and Radiation of Electromagnetic Waves, and Electromagnetism.

Education & Training

Academic education

Iscte – University Institute of Lisbon

- 2019 – 2022 Doctor of Philosophy (PhD), Information Science and Technology (specialization in Telecommunications and Networks)
- 2016 – 2018 Master degree (MSc), Telecommunications and Computer Engineering
- 2013 – 2016 Bachelor degree (BSc), Telecommunications and Computer Engineering

Certified training

CISCO Network Academy

- CCNA: Enterprise Networking, Security, and Automation
- CCNA: Switching, Routing, and Wireless Essentials
- CCNA: Introduction to Networks
- Introduction to Cybersecurity

Projects

- Oct 2024 – Dec 2025** **Atlantic Crossing: Crossing the Atlantic for Scientific and Teaching-Learning Cooperation**
Researcher · ISTAR-Iscte · funded by FLAD (Luso-American Development Foundation)
 A partnership between Iscte and Bridgewater State University (USA) to strengthen scientific and pedagogical ties and to lay the groundwork for joint specializations, postgraduate programs and joint degrees in areas such as Cybersecurity, Artificial Intelligence and Language Technologies. It includes activities in a COIL environment throughout the academic year, reciprocal short-term stays for faculty and students, and joint research projects with an emphasis on Cybersecurity and Language Technologies. [Project page](#)
- Jan 2023 – Jan 2024** **REMARKABLE: Rural Environmental Monitoring via ultra wide-Area networkS And distriButed federated Learning**
Researcher · COPELABS, Universidade Lusófona · Horizon Europe MSCA Staff Exchanges 2021
 EU-funded project on rural environmental monitoring using ultra wide-area networks and distributed federated learning. [Project page](#)

Teaching & Supervision

Courses taught

Since 2023 at Iscte

- Introduction to Cybersecurity
- Computer Network Security
- Introduction to Computer Networks
- Databases and Information Management
- Databases and Security
- Software and Application Security
- Operating Systems and Virtualization
- Computer Architecture
- Distributed Systems and Security
- Applied Project in Digital Technologies and Information Security I and II
- Machine Learning for Cybersecurity
- Systems Security and Resilience Verification
- Business Resilience and Continuity

Master's, postgraduate and executive education

- Security and Resilience of Communication Infrastructures and Networks (MSc and Postgraduate in Cybersecurity and Resilience)
- Cybersecurity for Healthcare Systems (MSc in Digital Transformation Management in Healthcare)
- Cybersecurity in School Context (MSc in Digital Transformation in Teaching and Learning)
- Cybersecurity for Executives and Digital Technologies Applied to Society (training courses)

Academic management

2025 – 2028 Director, BSc in Digital Technologies and Information Security

2024 – 2028 Member of the Pedagogical Committee

2025 – 2027 Member of the Plenary of the Pedagogical Council

Supervision

PhD theses in progress

- **Design and Development of RIS-aided XL-MIMO Transmission and Reception Schemes** – Diogo Roque Mendes
- **Federated Hybrid Intrusion Detection for IoT under Non-IID and Adversarial Conditions** – Mohamad Alzoubi

MSc dissertations in progress

- **Optimizing data transmission between healthcare provider handovers** – João Miguel Fernandes Teixeira
- **Assessing the Security of Widely Used Open-Source Web Applications on the WWW** – Pedro José Guerra Monteiro dos Santos
- **Private 5G Network Planning** – Miguel António Panzo Joel
- **Intelligent Attack Detection System** – João Mário Cortiços Lameiras
- **Optimizing C-UAS Systems through Computer Vision and Artificial Intelligence** – Luís Manuel Maceiro Cantante
- **Compliance Analysis of Authentication Information Security Policies** – João Pedro dos Santos Esteves Cajado
- **Detection and Mitigation of DDoS Attacks in Peer-to-Peer Networks** – Ivo Miguel de Sousa Rebelo
- **The Impact of the Advent of AI on Cybersecurity Professionals** – João Miguel Pinto Ferreira Nunes
- **IT Security Plan in a School Context: Managing Digital Risks in the Modern Era** – Mara Patrícia Falé Esteves Inácio
- **Data Privacy and Information Security in Educational Environments Using Generative Artificial Intelligence** – Ana Mónica Martins dos Santos

MSc dissertations completed

- **APTIoT: A Framework for Standardized Penetration Testing of IoT (2026)** – Marco Antônio Moreira Pinho de Camargo

- **EHR-Crawler: A Secure Network for Digital Health (2026)** – Stefano Dalmiani
- **Digital Skills of Healthcare Professionals for Implementing the European Health Data Space (2026)** – Alessandro Catanese
- **Anticipating Financial Risk: Machine Learning for Debt Management in Telecommunications (2025)** – Filipe de Oliveira Faustino Arsénio
- **Assessing Cybersecurity Risks in the Financial Sector: An AI-based Approach to Supplier Management and Access Controls (2025)** – João Miguel Isidro Antas
- **Online System for Efficient Follow-Up in Healthcare (2025)** – Tiago Alexandre Pinto da Águeda
- **Intelligent Platform for Automating Vulnerability Detection in Web Applications (2024)** – Diogo da Silva Moreira

Academic service

- Reviewer for several scientific journals, including those published by IEEE, Elsevier and Wiley (since 2022)
- Member of IEEE (since 2014) and of COST – European Cooperation in Science and Technology (since 2022)

Honors & Awards

2021	PhD Student Merit Grant <i>Fundação para a Ciência e a Tecnologia · 2 year contract</i>
2019	PhD Student Merit Grant <i>Iscte – University Institute of Lisbon · 1 year contract</i>
2019	3rd Place, IEEE MTT-S PhD Student Initiative, IMaRC 2019 <i>IEEE Microwave Theory and Techniques Society · Initiative to review conference papers and propose innovation suggestions</i>
2018	ISTA Top Talent <i>Iscte – University Institute of Lisbon</i>
2017	ISTA Top Talent <i>Iscte – University Institute of Lisbon</i>
2016	Certificate of Academic Excellence <i>Iscte – University Institute of Lisbon</i>

Publications

Journal articles (15)

15. **Optimizing the Achievable Sum-Rate in OFDM-based Multi-User MIMO Systems Assisted by Multiple Beyond-Diagonal RISs**
D. Mendes, N. Souto, J. P. Pavia and J. Silva
IEEE Open Journal of the Communications Society, 2026, 7, 1843–1860
14. **Beamforming Optimization and System-level Assessment in RIS-aided MIMO Systems Comprising Hybrid Precoding Architectures**
D. Mendes, J. P. Pavia, N. Souto, J. Silva and A. Correia
IEEE Access, 2026, 14, 29333–29348
13. **Anticipating Financial Risk: Machine Learning for Debt Management in Telecommunications**
F. Arsénio, A. Raimundo and J. P. Pavia
IEEE Access, 2026, 14, 29523–29538
12. **Intelligent Platform for Automating Vulnerability Detection in Web Applications**
D. Moreira, J. P. Seara, J. P. Pavia and C. Serrão
Electronics (MDPI), 2025, 14(1), 79
11. **System-level Assessment of Massive Multiple-Input-Multiple-Output and Reconfigurable Intelligent Surfaces in Centralized Radio Access Network and IoT scenarios in sub-6GHz, mm-Wave and THz bands**
J. P. Pavia, V. Velez, N. Souto, M. M. Silva and A. Correia
Applied Sciences, 2024

10. **Performance Assessment of a RIS-empowered post-5G/6G network operating at the mmWave/THz bands**
V. Velez, J. P. Pavia, N. Souto, P. Sebastião and A. Correia
IEEE Access, 2023
9. **YOLOX-Ray: An Efficient Attention-Based Single-Staged Object Detector Tailored for Industrial Inspections**
A. Raimundo, J. P. Pavia, P. Sebastião and O. Postolache
Sensors (MDPI), 2023, 23(10), 4681
8. **System-level assessment of low complexity hybrid precoding designs for massive MIMO downlink transmissions in beyond 5G networks**
J. P. Pavia, V. Velez, N. Souto, M. A. Ribeiro, P. Sebastião and A. Correia
Applied Sciences (MDPI), 2022, 12(6), 2812
7. **System-level assessment of a C-RAN based on generalized space–frequency index modulation for 5G new radio and beyond**
V. Velez, J. P. Pavia, C. Rita, C. Gonçalves, N. Souto, P. Sebastião and A. Correia
Applied Sciences (MDPI), 2022, 12(3), 1592
6. **Phase shift optimization algorithm for achievable rate maximization in reconfigurable intelligent surface-assisted THz communications**
J. Praia, J. P. Pavia, N. Souto and M. A. Ribeiro
Electronics (MDPI), 2022, 11(1), 18
5. **Low Complexity Hybrid Precoding Designs for Multiuser mmWave/THz Ultra Massive MIMO Systems**
J. P. Pavia, V. Velez, R. Ferreira, N. Souto, M. A. Ribeiro, J. Silva and R. Dinis
Sensors (MDPI), 2021, 21(18), 6054
4. **A generalized space-frequency index modulation scheme for downlink MIMO transmissions with improved diversity**
V. Velez, J. P. Pavia, N. Souto, P. Sebastião and A. Correia
IEEE Access, 2021, 9, 118996–119009
3. **Precoded Generalized Spatial Modulation for Downlink MIMO Transmissions in Beyond 5G Networks**
J. P. Pavia, V. Velez, B. Brogueira, N. Souto and A. Correia
Applied Sciences (MDPI), 2020, 10(18), 6617
2. **Design of a reconfigurable THz filter based on metamaterial wire resonators with applications on sensor devices**
J. P. Pavia, N. Souto and M. A. Ribeiro
Photonics (MDPI), 2020, 7(3), 48
1. **An Alternating Direction Algorithm for Hybrid Precoding and Combining in Millimeter Wave MIMO Systems**
N. Souto, J. Silva, J. P. Pavia and M. A. Ribeiro
Physical Communication, Elsevier, ISSN 1874-4907, 2019

Book chapters (2)

2. **Deep Learning Sensitivity Analysis for Computer Vision**
J. Matos-Carvalho, D. F. Fernandes, J. P. Pavia and S. D. Correia
Book chapter, Lecture Notes in Networks and Systems, 2026, pp. 96–107
1. **Development of Stand-Off Imaging Systems using Low Cost Plasma Detectors that Work in the GHz to THz range**
D. Akbar, H. Altan, J. P. Pavia, M. A. Ribeiro, A. B. Sahin and C. K. Sarikaya
Terahertz (THz), Mid Infrared (MIR) and Near Infrared (NIR) Technologies for Protection of Critical Infrastructures Against Explosives and CBRN, ISSN 1874-6500, 2021

Conference papers (11)

11. **Precoder and Combiner Design for Generalized Spatial Modulation based Multiuser MIMO Systems**
B. Brogueira, J. P. Pavia, N. Souto and A. Correia
2020 23rd International Symposium on Wireless Personal Multimedia Communications (WPMC)
10. **Hybrid Precoding and Combining Algorithm for Reduced Complexity and Power Consumption Architectures in mmWave Communications**
J. P. Pavia, N. Souto, M. A. Ribeiro, J. Silva and R. Dinis
2020 IEEE 91st Vehicular Technology Conference (VTC2020-Spring)
9. **Analysis of the Interaction between THz Waves and Low Cost Plasma Detectors for the Development of Stand-Off Imaging Systems**
J. P. Pavia, M. A. Ribeiro, C. K. Sarikaya, H. Altan, D. Akbar and N. Souto

8. **Application of a Mesh Free Monte-Carlo Method to the Analysis of Dielectric Slabs in Electromagnetics**
M. A. Ribeiro, J. P. Pavia and N. Souto
7th IEEE MTT-S International Microwave & RF Conference (IMaRC), 2019
7. **Design of Frequency Selective Devices for the THz Domain with Applications on Structural Health Monitoring**
J. P. Pavia, N. Souto and M. A. Ribeiro
Metamaterials'2019, 13th International Congress on Artificial Materials for Novel Wave Phenomena, 2019
6. **Design of a Novel THz Sensor for Structural Health Monitoring Applications**
J. P. Pavia, M. A. Ribeiro, C. K. Sarikaya, D. Akbar, H. Altan and N. Souto
IEEE WAMICON 2019, 20th Annual IEEE Wireless and Microwave Technology Conference
5. **Development of Stand-Off GHz Imaging Systems using Low Cost Plasma Detectors**
D. Akbar, H. Altan, J. P. Pavia, M. A. Ribeiro, C. K. Sarikaya and A. B. Sahin
Advanced Research Workshop (ARW): Terahertz (THz), Mid InfraRed (MIR) and Near InfraRed (NIR) Technologies for Protection of Critical Infrastructures against Explosives and CBRN, 2018
4. **Highly Selective Filter Design for the THz Domain using Frequency Selective Surfaces**
J. P. Pavia, N. Souto and M. A. Ribeiro
EIEC'18, XII Encuentro Ibérico de Electromagnetismo Computacional, 2018
3. **The Evolution and Future Perspective of Security in Mobile Communications Networks**
J. P. Pavia, D. A. Lopes, P. M. Cristóvão, P. Sebastião and A. Correia
ICUMT 2017, 9th International Congress on Ultra Modern Telecommunications and Control Systems, 2017
2. **Design of a THz-MEMS Frequency Selective Surface for Structural Health Monitoring**
J. P. Pavia, W. J. Otter, S. Lucyszyn and M. A. Ribeiro
META'16, 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics, 2016
1. **Design of Low Cost Frequency Selective Structures with Extremely Small Bandwidth**
J. P. Pavia, F. R. Prudêncio and M. A. Ribeiro
International Conference on Semiconductor Mid-IR and THz Materials and Optics (SMMO 2016), 2016