



JOÃO RIBEIRO PINTO

C U R R I C U L U M V I T Æ

Researcher in Pattern Recognition

Born: January 26th, 1994, in Vila Real, Portugal

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Google Scholar: <https://scholar.google.pt/citations?user=hhF9Q8kAAAAJ>

Publons: <https://publons.com/author/1450970/joao-ribeiro-pinto>

***About me:** I hold an integrated master degree in Bioengineering - Biomedical Engineering, and I am now pursuing a Ph.D. degree in Electrical and Computers Engineering. I have studied a wide array of subjects such as sensors, electronics, signal processing, image analysis, programming, biomechanics, robotics, bionics, and entrepreneurship. Currently, as Research Assistant at the Visual Computing and Machine Learning research group of INESC TEC, I work on signal processing, computer vision, and pattern recognition for continuous biometric recognition and well-being monitoring. I am especially focused mainly on the use of ECG signals from off-the-person, unconstrained, and seamless acquisition settings. Besides pattern recognition, I am very passionate about graphic design, web development, history, geography, vexillology, heraldry, and politics.*

Current positions

since 10/2018

Ph.D. Student, Faculdade de Engenharia da Universidade do Porto (FEUP)

since 10/2017

Research Assistant, Centre for Telecommunications and Multimedia – INESC TEC

Education

since 2018

Doctoral Programme in Electrical and Computers Engineering

Faculdade de Engenharia da Universidade do Porto

Thesis: *Seamless Multimodal Biometrics for Continuous Personalised Wellbeing Monitoring*

Supervisors: Prof. Dr. Jaime S. Cardoso (INESC TEC) & Prof. Dr. Miguel V. Correia (INESC TEC)

2014–2017

Integrated Master in Bioengineering – Biomedical Engineering

Faculdade de Engenharia da Universidade do Porto, Portugal

Integrated Bachelor & Master degree (grade 16 out of 20)

Dissertation: *Continuous Biometric Identification on the Steering Wheel*

Supervisors: Prof. Dr. Jaime S. Cardoso (FEUP) & Prof. Dr. André Lourenço (CardioID Technologies)

Research activity

since 10/2018	Ph.D. Scholarship for research on pattern recognition for multimodal biometrics and well-being monitoring Fundação para a Ciência e Tecnologia, IP (FCT), Portugal
01-09/2018	M.Sc. Scholarship on image analysis for archive documents and media content (CHIC project) Faculdade de Engenharia da Universidade do Porto, Portugal
08-12/2017	M.Sc. Scholarship on deep learning for electrocardiogram biometric identification Faculdade de Engenharia da Universidade do Porto, Portugal
2016-2017	M.Sc. Thesis Student and Intern on off-the-person continuous ECG biometrics CardioID Technologies Lda., Portugal

Current areas of expertise and research interests

Biometrics: seamless/unconstrained/off-the-person biometrics, physiological traits

Well-being monitoring: wearables, seamless acquisition, continuous monitoring, quantified self

Pattern recognition: computer-aided diagnosis, signal processing, image analysis, machine & deep learning

Scientific publications

JOURNAL ARTICLES (3)

- 2018 J. R. Pinto, J. S. Cardoso, and A. Lourenço, “Evolution, Current Challenges, and Future Possibilities in ECG Biometrics,” *IEEE Access* 6: 34746–34776. doi:10.1109/ACCESS.2018.2849870
- 2017 J. R. Pinto, J. S. Cardoso, A. Lourenço, and C. Carreiras, “Towards a Continuous Biometric System Based on ECG Signals Acquired on the Steering Wheel,” *Sensors* 17 (10): 2228. doi:10.3390/s17102228
- 2017 J. R. Pinto and J. M. R. S. Tavares, “A versatile method for bladder segmentation in computed tomography two-dimensional images under adverse conditions,” *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine* 231 (9): 871–880. doi:10.1177/0954411917714294

INTERNATIONAL CONFERENCE ARTICLES (6)

- 2020 J. R. Pinto and J. S. Cardoso, “Self-Learning with Stochastic Triplet Loss,” in *International Joint Conference on Neural Networks (IJCNN 2020)*, 19–24 July, Glasgow, United Kingdom. (accepted)
- 2020 J. R. Pinto, J. S. Cardoso, and M. V. Correia, “Secure Triplet Loss for End-to-End Deep Biometrics,” in *8th International Workshop on Biometrics and Forensics (IWBF 2020)*, 29–30 April, Porto, Portugal. (accepted)
- 2020 A. F. Sequeira, W. Silva, J. R. Pinto, T. Gonçalves, and J. S. Cardoso, “Interpretable Biometrics: Should We Rethink How Presentation Attack Detection is Evaluated?,” in *8th International Workshop on Biometrics and Forensics (IWBF 2020)*, 29–30 April, Porto, Portugal. (accepted)
- 2019 J. R. Pinto and J. S. Cardoso, “An End-to-End Convolutional Neural Network for ECG-Based Biometric Authentication,” in *10th IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS 2019)*, 23–26 September, Tampa FL, United States. (in press)
- 2019 G. Lopes, J. R. Pinto, and J. S. Cardoso, “Don’t You Forget About Me: A Study on Long-Term Performance in ECG Biometrics,” in *IbPRIA 2019: 9th Iberian Conference on Pattern Recognition and Image Analysis*, 1–4 July, Madrid, Spain. doi:10.1007/978-3-030-31321-0_4
- 2018 W. Silva, J. R. Pinto, and J. S. Cardoso, “A Uniform Performance Index for Ordinal Classification with Imbalanced Classes,” in *International Joint Conference on Neural Networks (IJCNN 2018)*, 8–13 July, Rio de Janeiro, Brazil. doi:10.1109/IJCNN.2018.8489327

BOOK CHAPTERS (2)

- 2020 J. R. Pinto and J. S. Cardoso, “ECG Biometrics,” in S. Jajodia, P. Samarati, and M. Yung, Eds., *Encyclopedia of Cryptography, Security and Privacy*, Springer, ISBN:978-3-642-27739-9 (in press)
- 2019 J. R. Pinto, J. S. Cardoso, and A. Lourenço, “Deep Neural Networks for Biometric Identification Based on Non-Intrusive ECG Acquisitions,” in K. V. Arya and R. S. Bhadoria, Eds., *The Biometric Computing: Recognition and Registration*, Boca Raton FL, United States: CRC Press, ISBN:978-0-8153-9364-1

NATIONAL CONFERENCE ARTICLES (4)

- 2019 J. R. Pinto and J. S. Cardoso, “Fine Segmentation of Head and Torso Using Label Refinement Networks,” in *25th Portuguese Conference on Pattern Recognition (RECPAD 2019)*, 31 October, Porto, Portugal.
- 2019 G. Lopes, J. R. Pinto, J. S. Cardoso, and A. Rebelo, “Long-Term Performance of a Convolutional Neural Network for ECG-Based Biometrics,” in *25th Portuguese Conference on Pattern Recognition (RECPAD 2019)*,

31 October, Porto, Portugal.

2019 P. Costa, P. Silva, J. R. Pinto, A. F. Sequeira, and A. Rebelo, “**Face Anti Spoofing: Handcrafted and Learned Features for Face Liveness Detection**,” in *25th Portuguese Conference on Pattern Recognition (RECPAD 2019)*, 31 October, Porto, Portugal.

2018 J. R. Pinto, J. S. Cardoso, and A. Lourenço, “**Improving ECG-Based Biometric Identification Using End-to-End Convolutional Networks**,” in *24th Portuguese Conference on Pattern Recognition (RECPAD 2018)*, 26 October, Coimbra, Portugal.

THESES (1)

2017 J. R. Pinto, “**Continuous Biometric Identification on the Steering Wheel**,” Master in Bioengineering - Biomedical Engineering, Universidade do Porto.

CITATION RECORD

78 citations

h-index 2

i10-index 2

(according to Google Scholar, 20/03/2020)

Student supervision

MASTER’S DISSERTATIONS (4 STUDENTS)

2020 **Co-supervisor** of Leonardo G. Capozzi, *Face Recognition For Forensic Applications: Methods for Matching Facial Sketches to Mugshot Pictures*, Master in Informatics and Computing Engineering, Universidade do Porto (2019–2020)

2020 **Co-supervisor** of Arthur J. Matta, *Deep Learning For Face Recognition: A Real-Time Face Biometric Recognition System*, Master in Informatics and Computing Engineering, Universidade do Porto (2019–2020)

2020 **Co-supervisor** of Carolina M. B. R. Afonso, *Changing Perspectives: Interlead Conversion in Electrocardiographic Signals*, Master in Network and Information Systems Engineering, Universidade do Porto (2019–2020)

2019 **Co-supervisor** of Gabriel C. Lopes, *Don’t You Forget About Me: Enhancing Long Term Performance in Electrocardiogram Biometrics*, Master in Bioengineering, Universidade do Porto (17/09/2018–17/07/2019)

INTERNSHIPS (11 STUDENTS)

2020 **Co-supervisor** of João Fonseca, *NEB Outclass Internship: Face Photograph Analytics*, at INESC TEC, Porto, Portugal (since 03/2019)

2020 **Co-supervisor** of Catarina Lopes, *Face photograph analytics for automatic assessment of ICAO guideline compliance*, at INESC TEC, Porto, Portugal (since 2019)

2019 **Co-supervisor** of Pedro Silva, Paulo Costa, Manuel Curral, Gil Teixeira, Pedro Neto, Martim Silva, João Mendes, João Moura, and Carolina Afonso, *CTM Summer Internships*, at INESC TEC, Porto, Portugal (03/07/2019 – 02/08/2019)

Editorial and scientific event contributions

2020 **Project Committee Member** for *VISUM 2020* summer school, Porto, Portugal

2020 **Demo Chair** for *IWBF 2020* international workshop, Porto, Portugal

2019 **Program Committee Member** for *MEDICON 2019* conference, Coimbra, Portugal

2019 **Special Session Co-Organiser** for *CIBB 2019* conference, Bergamo, Italy

2019 **Co-supervisor** on *CTM Summer Internships*, Porto, Portugal

2019 **Project Committee Member** at *VISUM 2019* summer school, Porto, Portugal

2019 **Workshop Co-organiser** at CTM Open Day 2019

2017 **Communication and Image Team Member** at *8th Symposium in Bioengineering*, Porto, Portugal

Peer review record

JOURNALS (19 MANUSCRIPTS)

2020 ○ IEEE’s *Access* (2);

○ BMC’s *Medical Informatics and Decision Making* (1);

○ Springer’s *Medical & Biological Engineering & Computing* (1);

○ MDPI’s *Symmetry* (1);

○ MDPI’s *Sensors* (1).

- 2019
 - MDPI's *Applied Sciences* (3);
 - IEEE's *Transactions in Information Forensics and Security (TIFS)* (2);
 - IEEE's *Access* (2);
 - MDPI's *Sensors* (1);
 - MDPI's *Algorithms* (1);
 - MDPI's *Electronics* (1);
 - Elsevier's *Biocybernetics and Biomedical Engineering (BBE)* (1);
 - Sage's *Journal of Engineering in Medicine* (1).

- 2018
 - MDPI's *Sensors* (1).

CONFERENCES (20 MANUSCRIPTS)

- 2020
 - *IWBF 2020* conference, Porto, Portugal (3);
- 2019
 - *CIBB 2019* conference, Bergamo, Italy (4);
 - *MEDICON 2019* conference, Coimbra, Portugal (5);
 - *IEEE ENBENG 2019* conference, Lisbon, Portugal (4).
- 2018
 - *IEEE BIOCAS 2018* conference, Cleveland, OH, United States (2);
 - *CIBB 2018* conference, Lisbon, Portugal (2).

Professional societies

- since 2015 Graduate Student Member (93660312) at IEEE (Institute of Electrical and Electronics Engineers)
- since 2017 Student Member at **Ordem dos Engenheiros** (official portuguese engineering society)

Voluntary and extracurricular activities

- 2016–2017 **Communication and Image Collaborator** at NEB-FEUP/ICBAS (Bioengineering students association)
- 2015–2017 **Vice-Chair** at EMBS UP (IEEE Engineering in Medicine and Biology student chapter)
- 2015–2017 **Member** at NuIEEE (IEEE student branch at Universidade do Porto)
- 2015–2016 **Student Researcher** at VILab (informal computer vision research group for students)
- 2014–2015 **Marketing Team Member** at BEST Porto (european engineering student group)

Programming & other knowledge

MOST USED

Python: numpy, scipy, scikit-learn, scikit-image, pandas, keras, pytorch
Matlab: including signal processing, image analysis, and machine learning tools
Web development: HTML5, CSS3, PHP, SQL
Documents: Microsoft Office, LaTeX
Design: Adobe Illustrator

BASIC KNOWLEDGE

C/C++: object-oriented programming
Java: including Android mobile application development
Web development: Javascript, Bootstrap, jQuery
LabVIEW: signal acquisition, processing, and control
OS: Linux, Windows

BRIEFLY USED

R: for bioinformatics programming
Web development: ReactJS, AngularJS, Sass, C#, .NET

Language proficiency

Portuguese – Native language
English – Full professional proficiency