Tiago Filipe Sousa Gonçalves

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I received my MSc in Bioengineering (Biomedical Engineering) from Faculdade de Engenharia da Universidade do Porto (FEUP) in 2019. Currently, I am a PhD Candidate in Electrical and Computer Engineering at FEUP and a research assistant at the Centre for Telecommunications and Multimedia of INESC TEC with the Visual Computing & Machine Intelligence (VCMI) Research Group. My research interests include machine learning, explainable artificial intelligence (in-model approaches), computer vision, medical decision support systems, and machine learning deployment.

Besides working, I enjoy practising Karate-Do Shotokai or reading about life, philosophy, economy, politics or fundamental science. Moreover, I do not refuse a good TV series or a good film (preferably at the cinema).

Experience

2024 – Present   ### Visiting Researcher / PhD Student

The Netherlands Cancer Institute
- Visiting PhD student at the Department of Radiology, under the supervision of Wilson Silva.

2024 – Present   ### Visiting Researcher / PhD Student

University of Utrecht
- Visiting PhD student with AI Technology for Life research group of the Department of Information and Computing Sciences, under the supervision of Wilson Silva.

2024 – Present   ### External Researcher / PhD Student

Athinoula A. Martinos Center for Biomedical Imaging | Massachusetts General Hospital
- External PhD student with The Quantitative Translational Imaging in Medicine Lab (QTIM), under the supervision of Albert Kim and Christopher P. Bridge.

2023 – 2024   ### Visiting Researcher / PhD Student

Athinoula A. Martinos Center for Biomedical Imaging | Massachusetts General Hospital
- Visiting PhD student with The Quantitative Translational Imaging in Medicine Lab (QTIM), under the supervision of Albert Kim and Christopher P. Bridge.

2021 – Present   ### Invited Teaching Assistant

Faculty of Engineering | University of Porto
- Invited Teaching Assistant during the 1st Semester of 2022-2023 on the course PRO - Programming (L.EEC004)
- Invited Teaching Assistant during the 1st Semester of 2021-2022 on the course TAIA - Advanced Topics on Artificial Intelligence

2020 – Present   ### Research Assistant

INESC TEC | Centre for Telecommunications and Multimedia

2019 – 2020   ### Research Assistant

Faculty of Engineering | University of Porto

2018 – 2018	**Junior Researcher**
	Fraunhofer Portugal AICOS

Education

2020 – Present	**Doctor of Philosophy** **Electrical and Computer Engineering**
	Faculty of Engineering | University of Porto
	• Thesis Title: "Interpretable Machine Learning and its Application to Medical Decision Support Systems"
2016 – 2019	**Bachelor of Science & Master of Science** **Bioengineering – Biomedical Engineering**
	Faculty of Engineering | University of Porto
	• Thesis Title: "Deep Aesthetic Assessment of Breast Cancer Surgery Outcomes"
2016	**Bachelor of Science** **Bioengineering – Biomedical Engineering**
	University of Twente
	• Internship and Bachelor's Thesis as an Erasmus+ Student.
2013 – 2016	**Bachelor of Science** **Bioengineering – Biomedical Engineering**
	Faculty of Biotechnology | Universidade Católica Portuguesa

Awards

2021	**MICCAI Hackathon 2021 Best Contribution Award**
	• Member of the winning team "HIT" (Helena Montenegro, Isabel Rio-Torto, João Nunes and Tiago Gonçalves) with the work titled "Show Me Consistency! Increasing the quality and consistency of annotations"
2021	**2nd Place World Data League**
	• Member of the team "Tech Moguls" (Joana Morgado, Paulo Maia, Tiago Gonçalves and Tomé Albuquerque) that achieved 2nd place at the World Data League competition on data science

Extracurricular Activities

2023 – 2024	**INvicta school of VIsion, Computational intelligence, and patTern Analysis (INVICTA) Spring School 2024**
	• Member of the Organising Committee
2021 – 2022	**VISion Understanding and Machine intelligence (VISUM) Summer School 2022**
	• Leader of the Project Committee
	• Member of the Organising Committee
2021 – 2022	**2nd Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics at WACV 2022**
	• Member of the Organising Committee
	• Sponsorship Co-chair
2020 – 2021	**VISion Understanding and Machine intelligence (VISUM) Summer School 2021**
	• Member of the Organising Committee
	• Member of the Project Committee
2020 – 2021	**1st Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics at WACV 2021**
	• Member of the Organising Committee
	• Sponsorship Co-chair

2019 – 2020 **VISion Understanding and Machine intelligence (VISUM) Summer School 2020**
- Member of the Organising Committee

2020 – 2021 **Conselho Nacional de Debates Universitários (Portuguese Universities Debating Council)**
- Treasurer of the Board of Directors

2019 – 2021 **Sociedade de Debates da Universidade do Porto (University of Porto Debate Society)**
- President of the Audit Committee
- Treasurer of the Board of Directors

2017 – 2019 **Associação Nacional de Estudantes de Engenharia Biomédica (Portuguese Biomedical Engineering Students' Association)**
- Treasurer of the Board of Directors
- Founder and Secretary of the General Assembly

2017 – Present **European Students, Sustainability Auditing (ESSA Project)**
- Social Responsibility Student Auditor

2017 – 2019 **ShARE-UP**
- President of the Board of Directors
- Network Manager of the Energy Network

2016 – 2017 **Uniplaces**
- Uniplaces Academy – Ambassador Program
- University Partnerships Manager Porto
- Creative & Social Media Manager Porto

2016 – 2018 **Núcleo de Estudantes de Bioengenharia FEUP/ICBAS (Bioengineering Student Association FEUP/ICBAS)**
- Member of the Communication and Image Department

2013 – 2016 **Associação de Estudantes da Escola Superior de Biotecnologia (Student's Union of the Faculty of Biotechnology)**
- Treasurer of the Board of Directors
- Vice-President of the Board of Directors

2013 – 2016 **Sociedade de Debates da Católica Porto (Católica Porto Debate Society)**
- President of the Audit Committee
- Founder and President of the Board of Directors

2013 – 2021 **Tuna da Universidade Católica Portuguesa – Porto (Academic Band of Universidade Católica Portuguesa – Porto)**
- President of the Audit Committee
- Vice-President of the General Assembly
- Vice-President of the Board of Directors
- Vice-President of the Audit Committee

2015 – 2016 **Erasmus+ Buddy (Faculty of Biotechnology)**
- Member of the Erasmus+ Buddy Committee

2013 – 2014 **Clube de Investigadores – Escola Superior de Biotecnologia (Researchers Club – Faculty of Biotechnology)**
- Project "Bacteria around the City", under the supervision of Professor Célia Manaia

2013 – 2016	**Programa de Mentorado – Escola Superior de Biotecnologia (Mentorship Programme – Faculty of Biotechnology)**
	• Mentorship Programme under the supervision of the Alumnus José Carlos Pereira

2014 – 2015	**Jornadas de Biotecnologia – Escola Superior de Biotecnologia (Journeys of Biotechnology – Faculty of Biotechnology)**
	• Treasurer of the Organising Committee
	• BSc Representative of the Organising Committee

Technical Skills

Programming Languages
- Python
- MATLAB
- JavaScript
- C/C++
- HTML
- CSS

Programming Frameworks
- Bootstrap
- Wordpress
- Django

Technologies
- Docker

Personal Skills

Languages Known
- Portuguese: Reading (Native), Writing (Native), Speaking (Native)
- English: Reading (Excellent), Writing (Excellent), Speaking (Excellent)
- French: Reading (Fair), Writing (Fair), Speaking (Fair)
- Spanish: Reading (Fair), Writing (Fair), Speaking (Fair)

Publications

Selected Publications in International Venues

1. Tiago Gonçalves, Dagoberto Pulido-Arias, Julian Willett, Katharina V. Hoebel, Mason Cleveland, Syed Rakin Ahmed, Elizabeth Gerstner, Jayashree Kalpathy-Cramer, Jaime S. Cardoso, Christopher P. Bridge, and Albert E. Kim. Deep Learning-based Prediction of Breast Cancer Tumor and Immune Phenotypes from Histopathology, 2024

2. Pedro C. Neto, Rafael M. Mamede, Carolina Albuquerque, Tiago Gonçalves, and Ana F. Sequeira. Massively Annotated Datasets for Assessment of Synthetic and Real Data in Face Recognition, 2024

3. Eduarda Caldeira, Pedro C. Neto, Tiago Gonçalves, Naser Damer, Ana F. Sequeira, and Jaime S. Cardoso. Unveiling the Two-Faced Truth: Disentangling Morphed Identities for Face Morphing Detection. In 2023 31st European Signal Processing Conference (EUSIPCO), pages 955–959, 2023

4. Pedro Serrano e Silva, Ricardo Cruz, A. S. M. Shihavuddin, and Tiago Gonçalves. Interpretability-Guided Human Feedback During Neural Network Training. In Antonio Pertusa, Antonio Javier Gallego, Joan Andreu Sánchez, and Inês Domingues, editors, Pattern Recognition and Image Analysis, pages 276–287, Cham, 2023. Springer Nature Switzerland

5. Helena Montenegro, Pedro Neto, Cristiano Patrício, Isabel Rio-Torto, Tiago Gonçalves, and Luís F Teixeira. Evaluating privacy on synthetic images generated using gans: Contributions of the vcmi team to imageclefmedical gans 2023. Challenge, page 8, 2023

6. Isabel Rio-Torto, Cristiano Patrício, Helena Montenegro, Tiago Gonçalves, and Jaime S Cardoso. Detecting concepts and generating captions from medical images: Contributions of the VCMI team to Image-CLEFmedical caption 2023. In CLEF2023 Working Notes, CEUR Workshop Proceedings, CEUR-WS. org, Thessaloniki, Greece, 2023

7. Wilson Silva, Tiago Gonçalves, Kirsi Härmä, Erich Schröder, Verena Carola Obmann, María Cecilia Barroso, Alexander Poellinger, Mauricio Reyes, and Jaime S Cardoso. Computer-aided diagnosis through medical image retrieval in radiology. Scientific reports, 12(1):20732, 2022

8. Pedro C. Neto, Tiago Gonçalves, Marco Huber, Naser Damer, Ana F. Sequeira, and Jaime S. Cardoso. OrthoMAD: Morphing Attack Detection Through Orthogonal Identity Disentanglement. In 2022 International Conference of the Biometrics Special Interest Group (BIOSIG), pages 1–5, 2022

9. Tiago Gonçalves, Isabel Rio-Torto, Luís F. Teixeira, and Jaime S. Cardoso. A Survey on Attention Mechanisms for Medical Applications: are we Moving Toward Better Algorithms? IEEE Access, 10:98909–98935, 2022

10. Pedro C. Neto, Tiago Gonçalves, João Ribeiro Pinto, Wilson Silva, Ana F. Sequeira, Arun Ross, and Jaime S. Cardoso. Causality-Inspired Taxonomy for Explainable Artificial Intelligence, 2024

11. Ana F. Sequeira, Tiago Gonçalves, Wilson Silva, João Ribeiro Pinto, and Jaime S. Cardoso. An exploratory study of interpretability for face presentation attack detection. IET Biometrics, 10(4):441–455, 2021

12. João Ribeiro Pinto, Tiago Gonçalves, Carolina Pinto, Luís Sanhudo, Joaquim Fonseca, Filipe Gonçalves, Pedro Carvalho, and Jaime S. Cardoso. Audiovisual Classification of Group Emotion Valence Using Activity Recognition Networks. In 2020 IEEE 4th International Conference on Image Processing, Applications and Systems (IPAS), pages 114–119, 2020

13. Sara P. Oliveira, João Ribeiro Pinto, Tiago Gonçalves, Rita Canas-Marques, Maria-João Cardoso, Hélder P. Oliveira, and Jaime S. Cardoso. Weakly-Supervised Classification of HER2 Expression in Breast Cancer Haematoxylin and Eosin Stained Slides. Applied Sciences, 10(14), 2020

14. Tiago Gonçalves, Wilson Silva, Maria J Cardoso, and Jaime S Cardoso. A novel approach to keypoint detection for the aesthetic evaluation of breast cancer surgery outcomes. Health and Technology, 10:891–903, 2020

15. Ana F. Sequeira, Wilson Silva, João Ribeiro Pinto, Tiago Gonçalves, and Jaime S. Cardoso. Interpretable Biometrics: Should We Rethink How Presentation Attack Detection is Evaluated? In 2020 8th International Workshop on Biometrics and Forensics (IWBF), pages 1–6, 2020