Gabriel Moreira

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Education

Carnegie Mellon University - School of Computer Science, Pittsburgh, USA *2021 – present*

Ph.D. Language Technologies Institute

CMU Portugal double-degree scholarship.
Advisors: João Paulo Costeira, Manuel Marques and Alexander Hauptmann.
Courses: Introduction to Deep Learning (A+), Multimodal Machine Learning (A+), Probabilistic Graphical Models (A), Nonlinear Optimization (A+), Network Science (A+).

Instituto Superior Técnico, Lisbon, Portugal *2017 – 2020*

M.Sc. Aerospace Engineering (Double Master's)

Thesis: A Unified Approach for Pose Graph Optimization.

Institut Supérieur de l'Aéronautique et de l'Espace, Toulouse, France *2017 – 2020*

M.Sc. Aerospace Engineering (Double Master's)

Instituto Superior Técnico, Lisbon, Portugal *2014 – 2017*

B.Sc. Aerospace Engineering

Honors: 2015–2017.

Professional Experience

Meta Reality Labs, Zürich, Switzerland *Jun 2024 - Nov 2024*

Research Scientist Intern

Research on self-supervised learning of implicit shapes without 3D annotations nor multi-view.

Carnegie Mellon University, Pittsburgh, PA, US *Aug 2022 - Dec 2022*

Teaching Assistant

TA for 11-777 Multimodal Machine Learning (Fall). Mentored five teams of graduate students during their research projects in areas such as vision-and-language navigation and multimodal retrieval.

Institute for Systems and Robotics, Lisbon, Portugal *Nov 2020 - Aug 2021*

Graduate Researcher

Conducted research on pose graph optimization, focusing on visual localization and mapping, and developed a C++ framework for fast 3D reconstruction. This work resulted in two publications: WACV and ICCV (oral).

Airbus Defence and Space, Toulouse, France *Apr 2019 - Oct 2019*

Research Intern

Research on computer vision algorithms for vision-based navigation in low-resource space applications. I developed new models for feature extraction using raw camera data, thus reducing the computational footprint. My research was selected for the 2020 PEGASUS student conference.

Programming

Python, C/C++, MATLAB, PyTorch, PyTorch3D, OpenCV, NumPy, SciPy, matplotlib, pandas, scikit-learn, AWS, Linux, git, Jupyter, LaTeX.

Languages

Portuguese (native), English (fluent), French (fluent), Spanish (advanced).

Selected Papers

G Moreira, M Marques, JP Costeira and A Hauptmann, Learning Visual-Semantic Subspace Representations for Propositional Reasoning. *ArXiv preprint*, 2024 [paper].

G Moreira, M Marques, JP Costeira and A Hauptmann, Hyperbolic vs Euclidean Embeddings in Few-Shot Learning: Two Sides of the Same Coin. *IEEE/CVF WACV*, 2024 [paper][code].

G Moreira, M Marques, JP Costeira and A Hauptmann, VICAN: Very Efficient Calibration Algorithm for Large Camera Networks. *IEEE ICRA*, 2024 [paper][code].

G Moreira, M Marques and JP Costeira, Rotation Averaging in a Split Second: A Primal-Dual Method and a Closed-Form for Cycle Graphs. *IEEE/CVF ICCV*, pp. 5452-5460, 2021 (Oral) [paper][code][video].

G Moreira, M Marques and JP Costeira, Fast Pose Graph Optimization via Krylov-Schur and Cholesky Factorization. *IEEE/CVF WACV*, pp. 1898-1906, 2021 [paper][video].