

FRANCISCO CERQUEIRA

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EDUCATION

Faculty of Engineering - University of Porto

MSc in Informatics and Computing Engineering - 18/20 (ECTS A)

Porto, Portugal

Sept. 2022 – July 2024

Faculty of Engineering - University of Porto

BSc in Informatics and Computing Engineering - 18/20 (ECTS A)

Porto, Portugal

Sept. 2019 – July 2022

EXPERIENCE

Researcher

University of Porto

March 2023 – September 2024

Porto, Portugal

- Worked on the “THEIA: Automated Perception Driving” project, a collaboration between Bosch and the University of Porto that aimed to improve the autonomous driving state of the art.
- Conducted a comparative study of methods that leverage unlabeled data in the context of autonomous driving for my master thesis. A software framework was also developed to facilitate the integration of these methods into other domains.
- Secured a research grant to develop a novel Deep-Learning model that combines input data from two modalities, RGB cameras, and LiDAR sensors. This data is used for three simultaneous tasks: object detection, lane segmentation, and LiDAR segmentation.

PROJECTS

AutoPark AI | C#, Unity

2024

- Developed an AI agent that learns to park a vehicle in a vertical parking spot using Reinforcement Learning.

Follower Robot using Ordinal Classification | Python, Pytorch

2023

- Developed software for a simulated robot that can track and follow another robot across different intersections.
- Used a computer vision model to predict the relative rotation and distance to the guide robot. Instead of performing a regression task, it was optimized by turning this into a classification problem.
- Used ordinal regression methods to enforce uni-modality in the predictions.

YOLOMM | Python, Pytorch

2023

- Extension of YOLOP model with LiDAR input.
- Paper submission and presentation at CIARP 2023.

Mobile Car Driving | Python, Java, Pytorch

2022

- Implemented a single-stage object detection model capable of detecting multiple types of road obstacles using Pytorch.
- Deployed the model using Pytorch-Mobile, capable of running on any Android device.
- Paper submission and presentation at RECPAD 2022.

PUBLICATIONS

YOLOMM – You Only Look Once for Multi-modal Multi-tasking. F. Campos, [F. Cerqueira](#), R. Cruz, J. Cardoso (2023). Iberoamerican Congress on Pattern Recognition 2023 (CIARP), Springer Nature Switzerland

Mobile App using Object Detection for Car Driving. F. Campos, [F. Cerqueira](#), V. Alves, R. Cruz (2022). Portuguese Conference on Pattern Recognition 2022 (RECPAD)

TECHNICAL SKILLS

Languages: Java, Python, C, C++, C#, SQL, HTML, CSS, JavaScript

Data Science: Pytorch, Numpy, Pandas, Sklearn, Matplotlib,

Web Development: React, Angular, Node.js, Django

Developer Tools: Git, Docker, Hydra, Unity

Writing: LaTeX, Overleaf, Markdown