Débora Oliveira

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Education

Technische Universität Nürnberg
Doctoral Candidate in Robotics and Artificial Intelligence — *November 2024 - present*

Technische Universität München
MSc Robotics, Cognition and Intelligence — *October 2022 - October 2024*

Universidade Federal de Campina Grande
MSc Electrical Engineering — *July 2021 - July 2022*
BSc Electrical Engineering (minor in electronics, equiv. Dipl. Ing-) — *July 2016 - June 2021*

Research Experience

Master Thesis and Guided Research — *October 2023 - October 2024*
Smart Robotics Lab, Technische Universität München

- Developing a learning-based scene-graph embedding representation for place recognition and point registration.
- Implementing voxelization, clustering, and deep learning algorithms on point clouds.

Master Thesis — *July 2021 - July 2022*
Automation and Robotics Laboratory (eROBOTICA), Universidade Federal de Campina Grande

- Created an optical tracking arena using low-cost off-the-shelf hardware, achieving an accuracy of less than 1 centimeter when tracking micro-air vehicles at 100Hz.
- Designed non- and parameterized adaptive control algorithms for drones.

Research Assistant — *September 2019 - September 2022*
Automation and Robotics Laboratory (eROBOTICA), Universidade Federal de Campina Grande

- Developed a Kalman-Filter sensor fusion and optical flow floor tracking for a drone.
- Supervised 5 undergraduate students in simulating a 6DOF Universal Robot manipulator using ROS-Gazebo.
- Trained +10 undergraduates in the dynamic and control of wheeled and flying mobile robots.

Professional Appointments

Working Student — *April 2023 - present*
Siemens Technology, Munich

- Implemented multi-object tracking metrics and optimized the sensor fusion system of the safe.trAIn project.
- Recorded autonomous driving scenarios in CARLA simulator.
- Published proprietary Python packages, Docker containers, ROS packages, and GitLab/GitHub CI workflows.

Integrated Circuit Physical Design Internship *August 2019 - July 2021*

Center for Research, Development, and Innovation in Information Technology, Communication, and Automation (VIRTUS), Universidade Federal de Campina Grande

- Designed resistor–transistor logic descriptions.
- Performed logical synthesis, structured floorplan, cell placement and sign-off of integrated circuits.

Other relevant experience

Teaching Assistant *October 2016 - September 2017*

Department of Informatics, Universidade Federal de Campina Grande

- Prepared lectures and assignments on C++ multi-threading for 35+ undergraduates.
- Organized course assessments and led weekly group discussions on OOP programming.

Skills and Awards

Programming languages/libraries

C, C++, C#, SystemVerilog, Verilog, Bash, CMake, MATLAB, Git/GitLab, ROS1, ROS2, HTML/CSS, OpenCV, Python, PyTorch, TensorFlow, CoppeliaSim, Simulink, Docker.

Languages

Portuguese (native), English (fluent) and German (proficient).

Hard skills

RTL and PCB design; embedded systems programming – PCL, FPGA, Arduino or Raspberry.

Awards

- Laureate bachelor student of the Electrical Engineering and Informatics Center of UFCG for the Fall 2021 term.
- 1st place Academic Excellence Award of the Department of Electrical Engineering of UFCG for 2020.
- Gold, silver and bronze medalist of national and regional Brazilian Informatics Olympiad.

Book Publications

- O'Kane JM, **A Gentle Introduction to ROS** (Portuguese version translated by IEEE RAS UFCG Student Branch), 2021. Available at `https://ras-ufcg.github.io/agitROS/`.
- Becker A, **KalmanFilter.NET**. (Portuguese version translated by IEEE RAS UFCG Student Branch), 2021. Available at `https://www.kalmanfilter.net/PT/default_pt.aspx`.
- Severance C, **Python for Everbody: Exploring Data in Python3** (Portuguese version translated by IEEE RAS UFCG Student Branch), 2020.
- Corke P, **Robot Academy** (Portuguese version translated by IEEE RAS UFCG Student Branch), 2020. Available at `https://robotacademy.net.au/`.