Débora Oliveira

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Electrical engineer passionate about embedded systems, with a minor in electronics. Currently honing computational skills while studying robotics at TUM :)

Education

Technische Universität München

M.Sc. Robotics, Cognition and Intelligence *October 2022 - present*

- Multi-disciplinary masters program combining mechanical and electrical engineering with informatics.
- Registered in machine learning, computer vision and mobile robotics courses.

Federal University of Campina Grande

M.Sc. Electrical Engineering *July 2021 - July 2022*

- Constructed 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.

B.Sc. Electrical Engineering (minor in electronics, equiv. Dipl. Ing-) *July 2016 - June 2021*

- Modeled and soldered PCB designs of analogical/digital circuits.
- Programmed microcontrollers PIC, Arduino and FPGA.
- Implemented analogical/digital control, fuzzy logic, genetic algorithms and neural networks for decision reasoning on wheeled robots and robotic manipulators.
- Designed power electronics circuits, polyphase and high-power transmission line systems.

Working Experience

Working Student *April 2023 - present*

Siemens AG, Munich

- Implementing multi-object tracking metrics and 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.

Research Assistant *September 2019 - August 2022*

Automation and Robotics Laboratory (eROBOTICA), Federal University of Campina Grande

- Implemented a feedback linearization controller and a drone's optical flow floor tracking.
- Supervised undergraduate students in simulating and controlling a 6DOF manipulator using ROS-Gazebo.
- Trained undergraduates in the dynamic and control of mobile robots, applying LiDARs and depth cameras.

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

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

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

Teaching Assistant *October 2016 - September 2017*

Department of Informatics, Federal University of Campina Grande

- Prepared lectures and assignments on C++ multithreading for undergraduates.
- Graded course assessments and led weekly group discussions on OOP programming.

Skills and Honors

Programming languages/libraries

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

Languages

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

Hard skills

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

Honors

- 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.

Publications

- Davi J.G. Sousa, Débora N.P. Oliveira, Marcos R.A. Morais, and Antonio M.N. Lima, **Iterative Learning Control for Quadrotor Pose Tracking**, Proceedings of XVI Simpósio Brasileiro de Automação Inteligente. SBA Sociedade Brasileira de Automática, 2023. (Pre-print available).
- Débora N.P. Oliveira, Marcos R.A. Morais, and Antonio M.N. Lima, **Optical tracking using COTS components**, Proceedings of Fifth IEEE Int. Conf. on Image Processing, Application and Systems. IEEE, 2022. doi: 10.1109/IPAS55744.2022.10053039.
- Débora N.P. Oliveira, Marcos R.A. Morais, and Antonio M.N. Lima, **Void detection for UAV based on optical flow and vanishing points**, Proceedings of XV Simpósio Brasileiro de Automação Inteligente. SBA Sociedade Brasileira de Automática, 2021. doi: 10.20906/sbai.v1i1.2586.
- J. M. O'Kane, **A Gentle Introduction to ROS**. (IEEE RAS UFCG Student Branch, Translation) Independently Published, 2021. (Original work published 2016). Available at `https://ras-ufcg.github.io/agitROS/`.
- A. Becker, **KalmanFilter.NET**. (IEEE RAS UFCG Student Branch, Translation) Independently Published, 2021. (Original work published 2016). Available at `https://www.kalmanfilter.net/PT/default_pt.aspx`.
- C. Severance, **Python Para Todos: Explorando Dados com Python 3** (IEEE RAS UFCG Student Branch, Translation). Independently Published, 2020. (Original work published 2016). ISBN 979-8635191408.
- P. Corke, **Robot Academy**. (IEEE RAS UFCG Student Branch, Translation) Queensland University of Technology, 2020. (Original work published 2017). Available at `https://robotacademy.net.au/`.