

# DANIEL DUCLOS-CAVALCANTI

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American/Brazilian Electrical and Computer Engineer by the Technical University of Munich. Experienced in Low-Level, FPGA, and Embedded development; as well as TinyML-related applications. Currently, more interested in Natural Language Processing as a field of research.

## EDUCATION

### M.Sc. Electrical/Computer Engineering, TU Munich

*Oct 2020 - Now*

- GPA: 3.0 (American Standards) | 2.5 (German Standards)
- Currently enrolled in last semester

### B.Sc. Electrical/Computer Engineering, TU Munich

*Feb 2017 - Sept 2020*

- GPA: 3.1 (American Standards) | 2.2 (German Standards)
- Bachelor Thesis, 1.3 - *Netlist Error Modeling*
- Unfinished Previous B.Sc., PUC-RIO, Brazil - 144/238 Credits from 2013-2016

## EXPERIENCE

### Working Student, EDA Department - TU Munich

*Jul 2022 - Oct 2022*

Assisted ongoing research within the Electronic Design Automation (EDA) department at TUM.

- Python development to automate and build a Design-Space-Exploration framework.
- Framework's goal was to find optimal heterogeneous hardware configurations to run inference on given ML models.

### Working Student, Molabo GmbH

*Aug 2021 - Jan 2022*

Assisted the motor-drive team, developing for their Embedded and FPGA devices.

- Responsible for the team's Jenkins Pipeline, hand-crafting Jenkinsfiles and supervising successful pipeline execution.
- Began containerized unit tests in C++ through gTest/GoogleTest with coverage via gcov.
- Aided development on embedded C code and VHDL Modules for the company's SoC.
- Built toolchains via CMake and GNU Make.
- Automation through one-off Python and Bash scripts.

### Tutor, RCS Department - TU Munich

*Aug 2021 - Jan 2022*

Assisted in teaching the Embedded Systems Programming Lab course given at TU Munich.

- Helped students during their course work and their final project, which consisted of writing FreeRTOS applications in C.

### Research Intern, RCS Department - TU Munich

*Oct 2020 - Feb 2021*

Full-time research intern at the Real-Time Computer Systems department within TUM.

- Working with Google's Edge Coral TPU and benchmarking it's performance.
- Benchmarking is done through the analysis of USB traffic during model inference (*Wireshark*, *pyshark*)
- Automated the training, freezing, inference and hardware deployment of several ML Models through Tensorflow.

## SKILLS

- Embedded/Low-level Development: C(**Experienced**), Rust(**Basics**)
- Scripting: Python(**Intermediate**), Lua(**Intermediate**), Bash(**Experienced**)
- Tool-chain Development: CMake, GNU Make, Git, Ansible
- Containerization/CI and CD: Docker, Jenkins, Travis CI
- Frameworks/Tools: OpenMPI, OpenMP, Tensorflow, GoogleTest, PyTest, Python CFFI, SDL2
- OS/Systems: FreeRTOS, Contiki OS, Linux, Arch Linux, Ubuntu
- Web Development: Basics of HTML, CSS and Javascript

## PROJECTS

FreeRTOS Space Invaders (C)  
Hamming-Code Error Detection (VHDL/C)  
Serve (golang): small cli tool

## CERTIFICATES

UCSD: Data Structures Fundamentals  
UT Austin: Embedded Systems - Microcontroller I/O  
NUS - Singapore: Natural Language Processing - Foundations

## LANGUAGES

English/Portuguese - *Native*  
German - *Fluent*  
Spanish - *Beginner*