DYLAN MÜLLER

ELECTRICAL ENGINEER

DETAILS

ADDRESS
Century City, Cape Town,
South Africa

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LINKS

Lunar Journal

GitHub

LinkedIn

SKILLS

GNU/Linux ●●●●●

C/C++ ●●●●●

Assembly Language ●●●●●

Python ●●●●●

Embedded Systems ●●●●●

Circuit Design ●●●●●

Java ●●●●●

C# ●●●●●

Javascript ●●●●●

Typescript ●●●●●

Git/GitHub ●●●●●

CI/CD ●●●●●

PROFILE

An analytical electrical engineer with experience in embedded systems. I am an independent thinker and problem solver with an advanced skill set in both software and electronics engineering.

EXPERIENCE

Embedded Software Engineer, Corigine

Cape Town

Feb 2022 — Present

Currently I am working in the SmartNIC R&D (research and development) division at Corigine as an embedded software engineer.

- ARM firmware development (C, Assembly).
- LLVM compiler development (C, Assembly)
- RISC-V assembly programming.
- BSP software development (Linux, C, Python).
- Driver development (Linux, C).
- Hardware (JTAG, UART) debugging.
- CI/CD, Ansible scripting (YAML).
- https://www.corigine.com

Radio Frequency (RF) Engineer, Hensoldt

Cape Town

Jun 2018 — Jul 2018

Completed internship at Tellumat Defense (acquired by Hensoldt).

- Embedded Linux (RTOS) experience.
- RF circuit design and simulation using Keysight ADS.
- S-parameter measurement using a VNA (vector network analyser) and spectrum analyser.
- Link budget simulation using C/C++, Java.
- Experience with agile/scrum methodology.
- https://www.hensoldt.net

EDUCATION

BSc(Eng) Electrical and Computer Engineering, University of Cape Town

2017 — 2021

- Cumulative GPA: 62.58% (~3.0/4.0).
- Research thesis: 77%.

COURSES

Advanced C Programming, Microchip Technology

Dec 2022

Advanced Embedded C Tips, Tricks, and Cautions, Microchip Technology

Dec 2022

TECHNICAL PROJECTS

EEE4022F - Research Thesis (Embedded Systems)

Developed a RSA encrypted USB password manager using the AVR ATMega328P microcontroller for my final year design project.

A cryptographic module was written in C to perform RSA-1024 encryption on text strings as well as an EEPROM based filesystem to store credential data.

The final design consisted of two ATMega328P microcontrollers, one implementing cryptographic and file system operations and another implementing USB host communication using the V-USB driver stack.

https://github.com/lunarjournal/EEE4022F

IDP8 - Infrared Data Protocol 8 (Embedded Systems)

Assembly implementation of a 3-bit IR (infrared) data protocol on an ATtiny85 microcontroller for remote control applications. The overall system consists of an IR transmitter and receiver.

https://github.com/lunarjournal/idp8

CDL86 - Compact Detour Library 86

cdl86 is an experimental detours library written in C for x86_64 Linux. It allows for the interception of C/C++ functions in memory. These functions may be standalone or PLT (Procedure Linkage Table) calls.

The library currently supports two types of function hooks:

- JMP patch - patches origin function with a JMP to detour.
- INT3 patch - places software breakpoint (SWBP) at origin address. Handles control flow to detour.

https://github.com/lunarjournal/cdl86

Z80EMU - Z80 Integrated Circuit Emulator

Emulation of the Zilog Z80 basic instruction set using Typescript. The Z80 is an 8-bit microprocessor which was widely used in many personal microcomputers of the 1980's such as the ZX spectrum.

The goal of this project was to emulate basic Z80 opcodes using Typescript so that simple programs would execute, with the ability to inspect registers after each cycle of execution.

https://github.com/lunarjournal/z80emu

EMU8910 - PSG Integrated Circuit Emulator

Emulation of the AY8910 sound synthesizer IC (integrated circuit) written in Typescript. The AY8910 was a 3 voice programable sound generator (PSG) designed by general instrument in 1978.

https://github.com/lunarjournal/emu8910