

Werner Bisschoff

EMBEDDED SOFTWARE ENGINEER

Cape Town, Western Cape, South Africa

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Summary

Adaptable and dedicated software engineer with a strong background in embedded and embedded linux systems. Proven proficiency in C++ and Python, with a curiosity to expand expertise in various disciplines. Passionate about continual learning and able to swiftly adapt to evolving project requirements. Keen to solve problems with an analytical and detail-oriented approach, ensuring high quality solutions.

Experience

Ingenics Digital GmbH (through ViVa Outsourcing)

Remote Work

EMBEDDED SOFTWARE ENGINEER

Mar 2023 - May 2024

- Architecting an *event-driven finite state machine* for a I2C-based system using C++ and FreeRTOS
- Developing applications for an Espressif microcontroller using embedded C/C++ and ESP-IDF
- Utilizing a highly configurable BLE stack for communications in the ESP environment for low-energy data transmission
- Leveraging Python to manage serial and BLE communications for seamless device interaction; also creating executable programs for client-side testing, enabling application functionality verification
- Setting up mock implementations of hardware functionality using Python allowing for quick testing and development without the need for physical hardware
- Managing specified data interchange through a lightweight, compact binary framing protocol (TinyFrame), ensuring fast and compact data transfers
- Implementing asynchronous development practices over serial communication with Python and Pytest
- Implementing an *active object* in the QP RTOS framework with QSPY support to serve as device simulation

UMAN Technologies

Century City, Cape Town

SOFTWARE DEVELOPER

Mar 2021 - Dec 2022

- Creating and maintaining Docker containers for development and CI/CD testing
- Implementing and testing new client services using RPC based on the SOME/IP protocol, as well as using *perf* to reduce performance bottlenecks
- Implementing IPC/RPC in existing C++ programs and Python scripts using Cap'n Proto and pycapnp
- Implementing a node tree to expose process-related variables and function calls to the IPC interface
- Analysing TCP/UDP traffic with Wireshark
- Leading a small team using AGILE development practices, including onboarding and mentoring new software developers

Expandrand

Remote Work

FREELANCE FULL STACK DEVELOPER

Nov 2020 - Dec 2020

- Architecting a full stack content management system to allow viewing and editing of client information and status, by leveraging Django and Django Rest Framework to create a REST API, and ReactJS to create a front end user interface

North-West University

Potchefstroom

JUNIOR LECTURER

Feb 2020 - Dec 2020

- Lecturing Python and C++ programming for *Introduction to Programming* for first year IT students in both remote and in-person settings

Education

North-West University

Potchefstroom

B.ENG. IN COMPUTER AND ELECTRONIC ENGINEERING

2020

- Developing an Android app with Kotlin to emulate an ISO 14443 protocol-based NFC payment system
- Developing microcontroller logic with C and the STM32 system as well as utilizing STM32CubeMX
- Implementing a PID controller with an Arduino to control a DC motor's voltage and speed
- Utilising object oriented programming to create a tower defence game using Qt C++, including pathfinding and network communication with the TCP/IP protocol
- Cleaning and analysing data from large spreadsheets with Python and Pandas, utilizing linear regression, correlation and machine learning

Skills

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| Embedded | C/C++ ESP32 ESP-IDF FreeRTOS NimBLE Event-Driven Finite State Machines QP RTOS |
| Web | Django REST API ReactJS JavaScript TailwindCSS ParcelJS Netlify |
| Data | Python Pandas NumPy Matplotlib Jupyter Notebook |
| Tools | Git Docker VSCode Devcontainers Homebrew WSL2 Linux Ubuntu Windows |