

# Werner Bisschoff

## EMBEDDED SOFTWARE ENGINEER

Cape Town, Western Cape, South Africa

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### Summary

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Adaptable and dedicated developer with a strong background in embedded and embedded linux systems. Proven proficiency in C++ and Python, with a passion for continual learning and a demonstrated ability to swiftly adapt to evolving project requirements.

### Experience

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#### Ingenics Digital GmbH (through ViVa Outsourcing)

EMBEDDED SOFTWARE ENGINEER

Remote Work

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

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#### North-West University

Potchefstroom

B.ENG. IN COMPUTER AND ELECTRONIC ENGINEERING

2020

- Developing microcontroller logic with C and the STM32 system as well as utilizing STM32CubeMX to generate code
- Developing an Android app with Kotlin to emulate a ISO 14443 protocol-based NFC payment system
- Cleaning and analysing data from large spreadsheets with Python and Pandas, utilizing linear regression, correlation and machine learning
- Implementing a PID controller with an Arduino to control a DC motor's voltage and speed

### 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