ASHER VALENTINI

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MISSION STATEMENT

A resourceful engineer who looks to take the initiative yet remains coachable. I am adept at developing original solutions but always happy to consider outside perspectives and build toward external ideas. Strong communicator and team player with a proven track record in each layer of embedded systems engineering from circuits to UI's and all the software architecture in-between.

EXPERIENCE

Cellectric BioSciences | 2023 – Present (2 years)

- **Circuit Design**: Designed and manufactured ESP32 architecture-based circuits targeting the control of hardware such as stepper/solenoid drivers and I2C/SPI sensors.
- **Firmware, RTOS & RPC Implementation**: Created C++ firmware with Real-Time Operating Systems and RPC frameworks.
- **GUI & Control Software**: Built a cross-platform GUI (Qt) and Python3 application following OOP, MVC, and event-driven design patterns to ensure thread safety and modularity.
- **DevOps & CI/CD**: Established CI/CD pipelines, Docker containers, and packaging processes to streamline development and deployment.
- **Microfluidics**: Designed a microfluidic subsystem integrating peristaltic and syringe pumps, solenoid valves, and sensor feedback (temperature, pressure, flow rate).

BlackGold.Earth | 2021 – 2022 (4 months)

- **Sustainable Systems**: Designed a modular micro-farm container facility.
- **Geospatial Software**: Collaborated on a proprietary satellite imagery solution for produce tracking.

EDUCATION

University of Stellenbosch, RSA | 2018 – 2022
BEng Mechatronic (with Honors, upper second class)

NOTABLE PERSONAL PROJECTS

Pressure driven flow controller

- Designed the circuit board to drive four piezoelectric micropumps. The circuit consisted of several H-Bridges, voltage boosters, current sensing op amps, I2C interfaces, and an embedded ESP32.
- Developed and programmed RTOS-based firmware for ESP32 microcontroller, incorporating PID control algorithms to optimize system operations and ensure precise device control in real-time environments.
- Notably, the system is equipped with current sensing capabilities to allow frequency tracking, improving system performance and lifecycle.

Thesis: [Cum-Laude]

- Designed and developed a heating vest prototype realized through a novel conductive heating fabric.
- The project's successful completion strengthened my knowledge of digital control design, C++, OOP principles, and sensor implementation and integration.

NOTABLE ACHIEVEMENTS

- **Medical Device Completion**: I am proud to say that the device developed at Cellectric from the ground up is undergoing hospital-based trials as well as research use with several universities, laboratories, and international Bio-Tech corporations.
- **Award-Winning Thesis**: My thesis (80%) was nominated for the Stellenbosch University Innovation Award and placed as the second runner-up among seven finalists selected from over 700 candidates.

CERTIFICATIONS

- ISO 13485 Internal Auditor

TECHNICAL SKILLS

- **Programming Languages**: Python, C++, Flutter/Dart, HTML, CSS, QSS
- **Libraries and Frameworks**: Qt, Pyside 6, PYQT5, Matplotlib, Pandas, Numpy, C++ STL 11/14/20, FreeRTOS
- **Tools and Platforms**: Jira, Confluence, GitHub, Git, EasyEDA, Altium, LTSpice, Yocto Project, Buildroot, Docker, CMake, Figma, Qt Creator, STM32CubeIDE, PlatformIO, Vim, NeoVim, VSCode
- **Architecture**: ARM and ESP32