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PROFESSIONAL SUMMARY

Final-year Computer Systems Engineering student at Tshwane University of Technology with hands-on experience in industrial automation, embedded systems and software engineering. I enjoy designing solutions that combine hardware and software, from PLC controlled automation systems and Microcontroller-based IoT projects, to C++ applications and web development. I am passionate about solving engineering problems through practical, reliable and well-integrated systems.

TECHNICAL SKILLS

Industrial Automation & Control

- PLC Programming (Ladder Logic), SCADA/HMI dashboard development
- Sensor interfacing, I/O configuration, PWM/ADC integration
- System commissioning, hardware troubleshooting, circuit design

Embedded Systems & IoT

- Microcontroller platforms: ESP32, Arduino Uno, FPGAs
- Real-time systems: ultrasonic distance measurement, water level monitoring, temperature sensing with ADC signal processing
- Communication protocols: Bluetooth, serial interfaces, wireless sensor networks

Software Development & Data

- **Languages:** C++ (OOP), C (embedded), Python (data analysis), Assembly, C# (Unity scripting), Oracle SQL, HTML, CSS, TypeScript.
- **Tools:** MS Office Suite (Excel data analysis, technical reporting), Git.
- **Frameworks:** Unity 3D/ML-Agents, procedural terrain generation (Diamond Square algorithm)

Networking & Infrastructure

- Network configuration, troubleshooting, CCNA-level routing and switching concepts

PROJECTS PORTFOLIO.

Industrial Automation

- **PLC Conveyor Belt System** - Designed and programmed a PLC-controlled sorting system that automatically separated metals from plastic materials using sensor feedback, eliminating manual sorting during testing and demonstrating reliable real-time automation

IoT & Embedded Systems

- **Water Level Monitoring System** – Developed an ESP32 based water monitoring system that provides real time tank level reporting, enabling users to monitor water levels without physical inspection.
- **Bluetooth Access Control** - Developed a secure entry system combining Bluetooth communication with microcontroller-based validation protocols.
- **Temperature Monitor** – Built an Arduino based temperature monitoring system that processes analogue sensor readings into accurate digital temperature measurements displayed in real-time, demonstrating accurate analog to digital signal processing and display integration.

Data & Software

- **Unity ML-Agents** - Trained intelligent agents using reinforcement learning for autonomous task performance within simulated 3D environments.
- **Transportation software** – Currently developing a software that centralizes the informal sector of long-distance travel with private vehicles, bringing that side of the Industry to light.

EDUCATION

Diploma in Computer Systems Engineering | Tshwane University of Technology | 2023–Present

Certifications & Programs:

- **Cisco Networking Academy** (2023) – CCNA Modules, Networking Essentials
- **Tshimologong Digital Skills Development Program** (2022)
- **National Senior Certificate** (2022)

EXTRACURRICULAR ACTIVITIES

- **IBM Z Datathon (2024)** - Collaborated in a competitive team environment to develop data-driven solutions for real-world problems, strengthening analytical thinking and deadline-driven delivery.
- **Top Junior Leadership Program (2023)** - Completed team building, problem-solving workshops, and leadership skills development.

CORE STRENGTHS

- **Systems Thinking** – I can translate between hardware constraints and software requirements, ensuring integrated solutions that work end-to-end.
- **Analytical Problem-Solving** - Strong debugging and system testing capabilities with a methodical approach to root-cause analysis.
- **Collaboration** - Effective communicator who thrives in cross-functional teams, from academic project groups to competitive hackathons like the IBZ Datathon.

REFERENCES

Mr. T D Matshiba

Lecturer: Computer Systems Engineering

Faculty: Information and Communication Technology

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