SIHLE SIBUSISO NTULI

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SUMMARY

An open-minded Electronics Engineer who is intrigued by new challenges that takes him out of his comfort zone. Experienced in project management, contract management and development of innovative problem solving solutions.

WORK EXPERIENCE

Electronic Engineer , Transnet Freight Rail   **Aug 2023 - Present**

- Implementation and deployment of robotic process automation solutions using Microsoft Power Platform(PowerApps, Power Automate and SharePoint).
- System integration and automation using python and Postgress SQL.
- Research and development of image processing and deep learning solutions using python and TensorFlow

Network Operating Centre Manager (Seconded), Transnet Freight Rail   **Jul 2022 - Jul 2023**

- Lead a team of technicians to ensure effective and efficient monitoring of telecommunication network elements nationally.
- Facilitate internal and external interface stakeholder engagement.
- Perform telecommunication network elements' system performance analysis to assist with business decisions using SAP and Microsoft Excel pivot tables.
- Manage telecommunication department's fault management process nationally.

Telecoms Engineer, Transnet Freight Rail   **Feb 2021 - Jun 2022**

- Project management from conceptual to close out phase.
- Contract management of Telecoms COPEX projects from contractor to close out phase while ensuring compliance with the applicable environmental and safety regulations.
- Co-ordinate major breakdowns to reduce the network outage duration, hence reducing business impact.
- Develop maintenance plan for telecommunications assets (Radio and data transfer), inline with the OEM set standard, to prolong the asset life cycle.

Engineer In Training, Transnet Freight Rail   **May 2018 - Jan 2021**

- Understand rail infrastructure engineering departments' functions and their integration.
- Conducted root cause analysis using lean six sigma methodology.
- Technical manager on Telecoms department COPEX projects.

EDUCATION

University of KwaZulu Natal   **Jan 2013 - Dec 2017**

- Bachelor of Science In Engineering(Electronics Engineering)

Linpark High School   **Jan 2008 - Dec 2012**

- Subjects: English (first language), IsiZulu (second language), Maths, Mechanical Technology, Physical Science,Engineering and Graphic Design, Life Orientation

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Protec Academy   **Jan 2011 - Dec 2012**

- Subjects: Mathematics, Physical Science, English and World of Work

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PROJECTS

Train Vehicle Identification Using OCR

- **Scope:** Design an alternative or backup system for conventional RFID-based train vehicle identification, capable of reading vehicle numbers from assets/icons under varying conditions.

- **Role:** Researcher and system developer, responsible for model design, system integration, and software implementation.

- **Solution:** Designed and implemented a dual–deep learning system for vehicle identification, integrating text detection and recognition. Built a complete pipeline with image normalization, perspective correction, and noise reduction to enhance accuracy, and developed a Python (Tkinter) interface for real-time result visualization.

- **Tools:** Deep Learning, Transfer Learning, Image Processing, OpenCV, Tkinter, Python 3, Tesseract OCR

- **Outcome:** A functional software prototype, with hardware integration and full system deployment currently in progress.

Trunk Radio Highsite Monitoring System

- **Scope:** Design and deploy a centralized radio trunking highsite monitoring architecture capable of aggregating heterogeneous legacy monitoring endpoints into a unified, real-time observability platform.

- **Role:** Engineered the end-to-end automation pipeline, designed the normalized relational data model, and defined the system integration interfaces

- **Solution:** The platform ingests real-time data streams from distributed highsite monitoring PCs using scheduled service automation. Incoming telemetry is normalized, validated, and written to a PostgreSQL database hosted on a central server. A live UI layer continuously polls and visualizes system metrics, alarm states, and highsite performance indicators to provide real-time operational awareness

- **Tools:** Python 3, PostgreSQL, NSSM (for service orchestration), Microsoft Access (legacy data integration)

- **Outcome:** A fully deployed consolidated radio trunking highsite monitoring system with deterministic ingestion, real-time visualization, and improved fault isolation across the RF infrastructure.

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Pooled Vehicles Booking System

- **Scope:** Design and implement an automated system to manage the booking and approval workflow for pooled vehicles, improving operational efficiency and reducing manual intervention.

- **Role:** Developer – responsible for system design, workflow automation, and integration with backend data sources.

- **Solution:** Developed an end-to-end solution leveraging Microsoft Power Platform. The system automates booking requests, approval routing, and record management using PowerApps for the user interface, Power Automate for workflow orchestration, and SharePoint as the centralized data repository. Power BI dashboards provide real-time reporting and analytics on vehicle usage, availability, and utilization trends.

- **Tools:** PowerApps, Power Automate, SharePoint, Power BI

- **Outcome:** A fully functional, automated vehicle booking system that streamlines approvals, centralizes data management, and provides actionable insights through real-time analytics

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ADDITIONAL INFORMATION

Technical Skills:
- C++, C, Python, HTML, CSS, JavaScript, Power Apps, Power Automate, Power BI, Postgress SQL, Tensorflow ,OpenCV, Deep Learning ,Computer Vision

Languages:
- IsiZulu
- English

Awards/Activities:
- Received "F.A Botha Shield" award for best technical student.
- Awarded "1st place in SAPPAS AAA Hackathon" for solving real life scenarios using Microsoft Power Platform
- Award "In recognition of positive spirit created and channeled throughout TFR by participating in Jerusalema Spring Dance Challenge" - Winner
- Research paper (*Train Vehicle Number Recognition and Consist Counting Using Deep Learning*) accepted for the International Heavy Haul Association 2025.