ANTONY DOUGLAS SMITH

ELECTRONIC ENGINEER

SKILLS

- Extensive experience in turnkey product development
- Well-developed skills in design for manufacturability of electronic products
- High capacity for analogue and digital electronic circuit design
- Highly experienced in software and firmware development in multiple languages
- Well-developed skills in conducting research and feasibility studies for clients

PERSONAL DETAILS

DATE OF BIRTH • 17 JANUARY 1986 •

NATIONALITY • SOUTH AFRICAN •

LANGUAGES • ENGLISH - FLUENT • AFRIKAANS - BASIC • SPANISH - BASIC •

FORMAL QUALIFICATIONS

ENGINEERING MASTERS BRIDGING PROGRAMME (NQF L8) • 2022 •
TSHWANE UNIVERSITY OF TECHNOLOGY
Research Methodology, Systems Modelling & Data Analysis
Summa cum laude

BACHELOR OF TECHNOLOGY IN ELECTRICAL ENGINEERING • 2014 •
TSHWANE UNIVERSITY OF TECHNOLOGY
Majoring in Digital and Electronic Engineering

NATIONAL DIPLOMA IN ELECTRICAL ENGINEERING • 2011 •
TSHWANE UNIVERSITY OF TECHNOLOGY
Majoring in Digital and Electronic Engineering

CERTIFICATE IN SOUND ENGINEERING • 2005 •
IN-HOUSE AUDIO TRAINING

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EXPERIENCE

ELECTRONIC DEVELOPMENT TECHNOLOGIST • TECHNOLOGY STATION IN ELECTRONICS • JUNE 2010 – PRESENT

The Technology Station in Electronics (TSE) forms part of the Technology Stations Programme, as an initiative of the Department of Science and Technology (DST) and is hosted by the Tshwane University of Technology (TUT) and the Council for Scientific and Industrial Research (CSIR). The TSE primarily supports SMEs with their product development and manufacturing needs within the electronics, mechanical, mechatronics, ICT, and advanced manufacturing sectors.

Responsibilities:

- Development and design for manufacturability of electronic products.
- Analogue and digital electronic circuit design.
- Software and firmware development in multiple languages.
- Conducting research and feasibility studies for clients.
- Routing and assembly of prototype Printed Circuit Boards.
- Programming and debugging of various microprocessors and embedded Linux systems.
- Writing and proofing of requirement specification documents.
- Verifying design test plans against product requirements.
- Fault finding, troubleshooting, and modifying prototype designs.
- Mentoring student-interns to a point of self-sufficiency.

Skills:

- Software and firmware development in Python, C, C++, C#, OOP, and Shell script in various IDE's such as Visual Studio, Microchip's MPLABX, Atmel's AVR Studio, Matlab, as well as Embedded platforms such as Raspberry Pi and Latte Panda.
- Hardware schematic design with multi-layer PCB layouts & multi-board assemblies using Altium Designer. Prior CAD experience includes Orcad & Proteus.
- Machine and Deep Learning applications including Vision Transformers, CNN and OpenCV-based image processing in both Python and C++.
- IoT hardware and firmware application utilising basic data handling pipelines in Google Cloud's IoT Core, BigTable & BigQuery.

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ELECTRICAL TRAINEE • LOADTECH ON-BOARD WEIGHING SYSTEMS • DECEMBER 2008 - JUNE 2009
Responsibilities:

- Soldering and circuit assembly of pre-developed weigh-load systems
- Fitting of flexible PCBs to steel units, cable assembly, crimping and stock duties
- Analogue to digital conversion of obsolete weigh-load systems

BAR MANAGER • LAPAMANZI • MAY 2006 – NOVEMBER 2006
Responsibilities:

- Preparing staff rosters
- Opening, cash-up and closing
- Stock-taking and stock-control
- Bar service
- Table service

BAR MANAGER • DUKE ON THE GREEN, LONDON • AUGUST 2005 – APRIL 2006
Responsibilities:

- Preparing staff rosters
- Opening, cash-up and closing
- Stock-taking and stock-control
- Cocktail bar service
- COSHH Trained

INHOUSE SOUND ENGINEER • ROXY'S NIGHT CLUB • JUNE 2004 – JUNE 2005
Responsibilities:

- Live mixing and equalising of sound levels for bands.

FREELANCE SOUND ENGINEER • AV LOGIC • JANUARY 2004 – JUNE 2005
Responsibilities:

- Sound engineering.
- Staging and set building for corporate functions.
- Recording (co-producing/co-editing) of studio performance.

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RELEVANT COURSES AND TRAINING

Master of Engineering Candidate at Tshwane University of Technology • MARCH 2021
Unstructured dissertation with a focus in the application of machine vision-based deep learning for the identification and localisation of anomalies for the classification of surface defects in the leather manufacturing industry.
Currently in the final stages of completion.

Published by MDPI Applied Sciences • AUGUST 2023
Applied Sciences as part of the Special Issue Computer Vision Applied for Industry 4.0 (ISSN 2076-3417).
Smith AD, Du S, Kurien A. Vision Transformers for Anomaly Detection and Localisation in Leather Surface Defect Classification Based on Low-Resolution Images and a Small Dataset. Applied Sciences. 2023; 13(15):8716. https://doi.org/10.3390/app13158716

Published in the Lecture Notes in Computer Science (LNCS) series • JANUARY 2023
Volume 13599 of the Lecture Notes in Computer Science series
Part II (Chapter 27, 978-3-031-20715-0, 541291_1_En)
Advances in Visual Computing (Springer; 1st ed. 2022 edition (17 Jan. 2023)):
17th International Symposium, ISVC 2022, San Diego, CA, USA, October 3–5, 2022, Proceedings, Part II
Article Title: Overview on Machine Vision Based Surface Defect Detection and Quality Classification in the Leather Manufacturing Process.

Co-Author in TUT FEBE Faculty Research Days 2022 • SEPTEMBER 2022
Rabe, W., Smith, A., Mmotong, A., Reddy, L. & Vorster, K. (2022). Development of non-invasive ventilator (BiPAP). In Proceedings of the Conference TUT FEBE Faculty Research Days 2022.

Co-Author in TUT FEBE Faculty Research Days 2022 • SEPTEMBER 2022
Rabe, W., Smith, A. & Vorster, K. (2022). Gesture Based IoT Device for Manufacturing Data Logging. In Proceedings of the Conference TUT FEBE Faculty Research Days 2022.

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Practical Transfer Learning (Deep Learning) in Python • JANUARY 2022
Udemy: Issued January 2022 · No Expiration Date
Credential ID: UC-936f1ac1-220d-4cd3-a3f0-74b53c0f5692
Certificates and course details are available on request.

Unsupervised Machine Learning from First Principles • DECEMBER 2021
Udemy: Issued December 2021 · No Expiration Date
Credential ID: UC-92cc3d63-f9fa-41eb-8204-e983ffa1125d
Certificates and course details are available on request.

MathWorks StateFlow Onramp: • MARCH 2021
MathWorks: Issued March 2021 · No Expiration Date
Certificates and course details are available on request.

MathWorks MATLAB Onramp: • FEBRUARY 2021
MathWorks: Issued February 2021 · No Expiration Date
Certificates and course details are available on request.

MathWorks Simulink Onramp: • FEBRUARY 2021
MathWorks: Issued February 2021 · No Expiration Date
Certificates and course details are available on request.

Deep learning A-Z: Hands on Artificial Neural Networks • APRIL 2020
Udemy: Issued Apr 2020 · No Expiration Date
Credential ID UC-873f0ba5-f51d-4858-bc2d-1affc6d8e361
Machine & Deep Learning courses, covering real world applications of both supervised and unsupervised learning methods of artificial intelligence. Applications include the use of Artificial, Convolutional and Recurring Neural Networks, Self-Organizing Maps & Boltzmann Machine.

Google Cloud Professional Cloud Architect • APRIL 2020
Multiple certified courses in preparation for the Google endorsed “Professional Cloud Architect” exam. Course certificates include Essential Google Cloud Infrastructure: Foundation, Google Cloud Platform Fundamentals: Core Infrastructure, Essential Google Cloud Infrastructure: Core Services, Elastic Google

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Cloud Infrastructure: Scaling and Automation, Reliable Google Cloud Infrastructure: Design and Process. All certificates available upon request.

Git & GitHub Crash Course • MARCH 2020
Completed this refresher course in GitHub's command line-based controls, in order to get the most out of one of the world's most powerful hosts for software development version control [Credential No: UC-1f7fb43a-5596-422e-aa71-1210941d7ed8]

Linux Command Line Basics • MARCH 2020
Completed this refresher course in all Linux based commands, in order to gain deeper insight into embedded systems. Topics include file system hierarchy, wild cards, create, view & manipulate files, various text editors, creating commands and creating hard & soft links [Credential No: UC-0e014453-c891-428f-bdcc-31d8a9892d29]

Robot Operating System (ROS) • NOVEMBER 2018
Introduction to mobile robotics, ROS file system, ROS communication, Hardware & sensors, ROS serial & tele-operation, AR-Tag detection, Localization & mapping, Introduction to SLAM algorithms, Participation in self-navigating robot race challenge.

Professional SCRUM Masters (PSM I) • OCTOBER 2016
Fundamental Scrum Knowledge, Agile Manifesto, Scrum Foundations, Empirical and Defined Processes, Sprint, The Significance of 'Done', The Five Scrum Values, Applicability of Scrum
Fundamentally designed for software development, we then adapted these principles to a full product development process.

Matlab Fundamentals • APRIL 2016
Full Matlab Fundamentals course covering mathematical functions, algorithms, graphing & simple mathematical GUI applications writing, presented by Opti-Num Solutions [CESA-7-18-05/2018]

Student Mentor: B-Tech Electrical Engineering • JANUARY – JULY 2015
Mentored an Electrical Engineering student for their final B-Tech design project, which consisted of decoding audio formatted data (mp3 and WAV) for streaming audio signal to Bluetooth headphones. Assisting with code, hardware issues and fault finding. Signed off on all work and hours completed.

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I.P.C. Trainer Course • MAY 2011
This course was a comprehensive five-day course that provided a complete review of the J-STD-001 and Certification addressing Soldering Technique, Wire Preparation, Terminals, Through-hole, and Surface Mount Technology.

FPGA and VHDL Course • June 2010
A course on design and implementation of Altera's FPGA systems as well as the language and functionality known as VHDL. A practical test application in logic gates and embedded circuit design was completed by the end of the course.

CURRENT REFERENCES

DR S.J. JACOBS • MANAGING DIRECTOR • TECHNOLOGY STATION IN ELECTRONICS • +27 76 553 3362 • jacobssj@tut.ac.za

MR KOBUS VORSTER • OPERATIONS MANAGER • TECHNOLOGY STATION IN ELECTRONICS • +27 76 553 3362 • vorsterk1@tut.ac.za

MR WAYNE RABE • AREA MANAGER • TECHNOLOGY STATION IN ELECTRONICS • +27 76 553 3362

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