Mr Pieter Marx

Computer and Electronic Engineer

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Summary

PhD candidate in Computer and Electronic Engineering at the North-West University. Experienced in machine learning, embedded systems, and industrial automation. Accomplished lecturer with experience teaching core engineering modules such as Signal Theory and Algorithms and Optimization, recognized for exceptional teaching and student engagement. Awarded multiple honors during academic training, including the NWU ECSA Merit Certificate and Best Final Year Project for designing an innovative SCARA robot. Skilled in software development, embedded systems, and system simulation. Holds certifications in Siemens PLC programming and is actively enhancing expertise in web development and generative AI. Proven track record in integrating simulation model development, data generation, fault detection and isolation, and machine learning for health monitoring applications, with research focused on improving psychophysiological condition monitoring. Passionate about leveraging interdisciplinary knowledge to solve complex technological challenges and create impactful solutions.

Work Experience

1. 2019 - Three Weeks Vacation Work at Nanoteq (Porting Project Code from Delphi Borland to C++ and C#)
2. 2021 to 2023 - SETH-Academy Instructor, Marketing Team Member and Teacher Assistant at North-West University Potchefstroom
3. 2023 to 2025 - Four Semesters as a Contracted Lecturer and Researcher at North-West University Potchefstroom
   - Algorithms and Optimization (2nd Year 1st Semester Engineering Module)
   - Signal Theory 1 (2nd Year 2nd Semester Engineering Module)

Education

High School

1. 2016 - Matric at Brits High School (93%)
   - National Senior Certificate - **PDF**
   - Dux Learner Certificate - **PDF**
   - 6th Place Top Matriculant in North-West Province Certificate - **PDF**
   - Advanced Mathematics (82%) - **PDF**

University - *Full NWU Academic Record*

1. 2017 to 2020 - BEng in Computer and Electronic Engineering at North-West University Potchefstroom (86% - Cum Laude) - **PDF**
   - 2017 - Best 1st Year Student in Computer and Electronic Engineering (91%) - **PDF**
   - 2018 - Best 2nd Year Student in Computer and Electronic Engineering (87%) - **PDF**
   - 2019 - Best 3rd Year Student in Computer and Electronic Engineering (83%) - **PDF**
   - 2020 - Best 4th Year Student in Computer and Electronic Engineering (79%) - **PDF**
   - 2020 - Best Final Year Project in the School of Electrical, Electronic, and Computer Engineering (SCARA Robot) - **PDF**
   - 2020 - ECSA Merit Certificate (Top Achieving Student Across All Years in the Faculty of Engineering) - **PDF**
2. 2021 to 2023 - MEng in Computer and Electronic Engineering at North-West University Potchefstroom (73%) - **PDF**
   - Thesis: Automatic classification of patient status based on ventilation data - **PDF**
3. 2025 to Current - PhD in Computer and Electronic Engineering at North-West University Potchefstroom (TBD)
   - Article 1: A Simulation Model for Common-Mode Mechanical Ventilation Data Generation: Integrating Anthropomorphic and Disease Parameters for Fully Sedated Patients
   - **Article 2**: A Technique for Monitoring Mechanically Ventilated Patient Lung Conditions - **PDF**

🧠 Skills

1. Programming Languages: C, C++, C#, Python, Java, JavaScript, HTML, CSS, PHP, SQL, MATLAB, Qt, Delphi Borland 7 and Visual Basic
2. Embedded Software Development: STM32CubeIDE, Keil MDK-ARM, MPLAB X, PlatformIO, Raspberry Pi and Arduino
3. Simulation Tools: Simulink, Simscape, LTspice and FEMM
4. PLC Programming: TIA Portal
5. CAD Tools: Siemens NX
6. Version Control Tools: GitHub
7. Office: Microsoft Office and Libre Office

📜 Extra Certificates

1. 2019 - North-West University Solar Photovoltaic Systems & E-Mobility Power Systems Training - **PDF**
2. 2023 - North-West University Centre for Teaching and Learning Introduction Programme for Academics - **PDF**
3. 2019 and 2024 - North-West University Siemens PLC Training for SIMATIC Industrial Automation Systems
   - Siemens TIA-MICRO1 (S7-1200 Basic Course) - **PDF**
   - Siemens TIA-MICRO2 (S7-1200 Advanced Course) - **PDF**
   - Siemens TIA-PRO1 (Programming 1 with S7-1500, ET200SP, TP700 HMI and G120 Drive) - **PDF**
   - Siemens TIA-PRO2 (Programming 2 with S7-1500, ET200SP, TP700 HMI and G120 Drive) - **PDF**
4. 2025 (Busy) - Udemy: The Complete 2024 Web Development Bootcamp
5. 2025 (Busy) - Udemy: Machine Learning, Data Science and Generative AI with Python

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📄 Recommendation Letters

1. 2016 - **Recommendation Letter** from **Mr. Du Plessis** (Principal), Brits High School, recognizing academic excellence and leadership
2. 2019 - **Recommendation Letter** from **Mr. Coetzer** (Senior Software Engineer) and **Mr. Wagner** (Senior Manager), **Nanoteq**, acknowledging technical skills and work ethic
3. 2023 - **Recommendation Letter** from **Prof. Marais** (Undergraduate Program Manager and Master's Supervisor), North-West University, highlighting performance in studies and research potential
4. 2024 - **Recommendation Letter** from **Prof. Holm** (Centre for Teaching and Learning Mentor), North-West University, acknowledging contributions to academia and teaching excellence