Maxwell J. Pembo

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Education

Bachelor of Science: Computer Engineering, Expected in 05/2026
University Of Nebraska – Lincoln - Lincoln, NE
Relevant Coursework:

- Advanced Embedded Systems, Internet Of Things, Computer Architecture, Computer Organization, Operating Systems, Machine Learning
- Digital Logic Design, Circuits III, Signals & Systems

Experience

Software Developer Intern, 05/2025 to Current
Sandhills Global – Lincoln, NE

- Developed internal business software applications and APIs to improve departmental workflows.
- Built application components using .NET MVC framework and React.js for software development projects.
- Collaborated within an Agile development team, attending daily stand-ups, code reviews, and sprint planning.
- Contributed to the development of 10+ department software projects by implementing frontend and backend features.

PROJECTS

Sky-Beam Drone Communication - Senior Design Project 2025

- Designed a 60 GHz mmWave beamforming and tracking system to maintain a communication link between a stationary base station and a moving drone.
- Implemented embedded firmware for the base station to process antenna data and dynamically track the airborne target using C++.

FPGA Oscilloscope & Function Generator - Advanced Embedded Systems Project 2025,

- Built a functional FPGA based oscilloscope and function generator using VHDL and Xilinx Vivado on the Nexys Video board.
- Developed digital logic components and drivers, including VGA/HDMI video output that achieved a 640×480 display at 60 FPS.
- Implemented waveform generation on a 32-bit MicroBlaze soft processor using C algorithms.
- Verified system functionality using hardware testing and software simulators like testbench.

ToolSense - Smart Toolbox and Workshop Management System - Internet of Things Project 2025,

- Developed multi node embedded system using ESP32/ESP32-Cam end nodes and a Raspberry PI as a gateway to monitor tool and workshop activity in real time.
- Implemented on-device Computer Vision on the ESP32-Cam and Machine Learning based Facial Recognition software on Raspberry PI.
- Integrated LORA and Wi-Fi Communications between embedded systems and Azure IOT Cloud to track live tool and the user's information.

SKILLS

- **Embedded Systems & Firmware:** C, C++, Assembly, Bare-Metal Firmware, Interrupts & Timers, Arduino, ESP32, ARM Cortex-M
- **Software Development**: C#, ASP.NET, Java, JavaScript, React, jQuery, Python, HTML, CSS, SQL
- **Hardware Design :** VHDL, Verilog, FPGA Design, UART, I²C, GPIO
- **Computer Software:** Linux, Git, Visual Studio Code, AMD Vivado, Intel Quartus, Azure Services