

# Rajesh Shah

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## Work Experience

### Kantipur Engineering College

Lecturer

Kantipur Engineering College, Nepal

Nov 2018 - Dec 2023

- Taught courses on Embedded System, Digital Logic and Microcontroller Programming providing a strong foundation in embedded software concepts including C and Assembly programming and implementation techniques.
- Led student projects involving microcontroller programming and troubleshooting, emphasizing SPI and UART protocols for 8051 microcontrollers relevant to developing robust embedded systems.
- Supervised laboratory sessions with a focus on firmware development using C and in-depth debugging practices for microcontrollers and FPGA, incorporating the use of VHDL.
- Utilized Xilinx for FPGA programming and Keil for embedded firmware development projects, aligning with industry-standard embedded systems practices.

### Bajra Technologies Pvt. Ltd

Embedded Engineer

Bajra Technologies Pvt. Ltd, Nepal

Nov 2016 - Apr 2018

- Developed firmware for a handheld ECG device, integrating signal acquisition, and noise filtering techniques applicable to signal processing while optimizing for memory-constrained environments.
- Utilized BLE technology for seamless wireless signal transmission to smartphone devices using the CC2540 SoC, showcasing applied Bluetooth protocol knowledge.
- Engaged in system testing and troubleshooting using oscilloscopes and logic analyzers, enhancing firmware debugging and refinement processes for complex embedded systems.

## Education

### Youngstown State University, Ohio, USA

Master of Computing and Information Systems (MCIS)

Dec 2025

- GPA: 4.0, Expected Graduation: December 2025
- Courses: Data Structures & Algorithms, Object Oriented Programming in C++, Operating Systems

### Tribhuvan University, Nepal

Bachelor of Electronics and Communication Engineering

Mar 2016

- Percentage: 75%
- Courses: Programming in C, Embedded System, Computer Organization and Architecture, Electronic Devices and Circuit, Digital Signal Processing

## Skills

**Programming Languages:** C, C++, Python, Assembly, VHDL

**Embedded Systems:** Firmware development for microcontrollers (8051, Atmega32, STM32)

**Development Environment:** Visual Studio, Keil

**Debugging Tools:** JTAG, gdb, logic analyzers, oscilloscopes, Firmware Debugging

**Protocols:** SPI, I2C, UART, CAN, Bluetooth Low Energy

**Version Control System:** Git

**Testing Framework:** Google Test

## Projects

### Tribhuvan University

FPGA Implementation of EMG-controlled Prosthetic Hand

- Developed a prosthetic hand that received EMG signals, identified hand gestures, and replicated them using a Xilinx Spartan 3E FPGA board with VHDL programming.
- Designed EMG signal acquisition circuits, implemented band-pass filters, and classified signals using clustering algorithm.
- Demonstrated proficiency in hardware-firmware integration and VHDL programming.

### Tribhuvan University

Accelerometer-Based Pointing Device

- Programmed an embedded system using Atmega32 to interpret accelerometer data for pointing device control for gaming application, ensuring seamless integration of SPI communication.