Prashamsa Koirala

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EDUCATION

Duke University, B.S. in Electrical Engineering and Computer Science *Aug 2022 - May 2026*
Relevant Coursework: Introduction to Python, Data Structures and Algorithms, Computer Architecture, Advanced Computer Architecture, Algorithms, Introduction to Database Systems, Software Design, Operating Systems
Extracurriculars: Duke Technology Scholars, Duke Society of Women Engineers, Duke Bass Connections Research Program

TECHNICAL SKILLS

Programming Languages: Java, Python, SQL, C, C++, C#, JavaScript, HTML/CSS
Frameworks & Tools: React.js, Java Swing, JUnit, Gradle, Git, PlatformIO, Figma, MQTT, Modbus

WORK EXPERIENCES

Siemens **Durham, NC**
ELDP Software Engineer Intern | C++, Modbus TCP, Arduino, Figma, Git, PlatformIO *May 2025 - Aug. 2025*
- Engineered a fully interoperable Modbus TCP communication device on a microcontroller-based embedded platform supporting all standard register types, enabling seamless integration with any third-party Modbus client while achieving 100% test coverage via comprehensive black-box testing.
- Designed and implemented an abstracted, multi-protocol network layer and a high-performance Modbus server that accurately parses requests, executes register operations, and returns protocol-compliant responses, ensuring robust communication over both Ethernet and Wi-Fi networks.
- Enhanced user experience and maintainability by applying MVC architecture to integrate a TFT display with event-driven controls, real-time serial output visualization, and UI layouts designed with Figma, delivering intuitive device management adaptable across diverse client environments.

ECE 495/496: Software Engineering **Durham, NC**
Teaching Assistant | Java, JUnit, Gradle *Jan. 2024 - May 2024*
- Mentor 15 students in building a strategic, multiplayer trading game in Java implementing robust modular coding and logic-driven strategies for competitive play.
- Simulate industry-style code reviews, assessing code presentation and bug identification, and give tailored feedback to 6 groups to enhance technical communication and review skills.
- Direct students in writing JUnit tests for 90% or higher code coverage and using Git for effective version control.
- Refine bi-weekly Agile sprint milestones for clarity and feasibility, achieving a 92% milestone delivery rate. Evaluate code against sprint criteria and provide individualized feedback.

Intel **Rio Rancho, NM**
Engineering Intern | React.js, Python, SQL *June 2024 - Aug. 2024*
- Developed an automated notification system using React.js, Python, and SQL to flag units on hold over 24 hours, helping engineers prioritize urgent tasks and improve production efficiency, reducing lot tracking time by 70%.
- Expanded and organized the internal knowledge base and training materials on semiconductor fabrication and wafer process flows, speeding up onboarding and improving engineer understanding.
- Improved product quality and data reliability by monitoring device lifecycles, mapping unique identifiers across processes, and identifying data split points to prevent information loss.

Kathmandu Geolab, Early Earthquake Warning Bass Connections **Durham, NC**
Researcher | MATLAB, IoT, C++, MQTT, ESP32 *Aug. 2023 - Present*
- Developed a Monte Carlo simulation in MATLAB using 2015 Gorkha earthquake ground motion data, proving randomized geophone parameters within tolerances achieve 95% p-wave detection accuracy, reducing calibration time by over 100 hours and accelerating deployment for seismic networks.
- Engineered an embedded IoT system integrating Raspberry Pi, an ESP32 microcontroller programmed in C++, and an accelerometer to wirelessly transmit acceleration data at 100 samples per second, achieving a 40% speed increase over previous designs, via the MQTT communication protocol, enabling real-time monitoring and data collection.
- Selected as one of five to present research findings at the Kathmandu Geohazard Early Warning Symposium during a two-week research trip to Nepal, contributing to international discussions on earthquake early warning systems.

PROJECTS

Smart Basketball | Verilog, Assembly
- Real-time, interactive basketball game using a custom 32-bit, five-stage pipelined processor with bypassing and hazard handling, developed in Verilog and Assembly. Integrated a register file, ALU, and multiplier/divider units to meet a 50 MHz timing requirement on an FPGA.

Bazaar | Java, Java Swing, JUnit, Object Oriented Programming, Agile
- Turn-based multiplayer trading game in Java using object-oriented design principles, featuring an interactive Java Swing GUI for dynamic card displays, pebble exchanges, and real-time score updates within an Agile development setting.