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 & 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 **Peachtree Corners, GA**
ELDP Software Engineer Intern | C++, Modbus TCP, Arduino, Figma, Git, PlatformIO *May 2025 - Aug. 2025*
- Built a fully interoperable Modbus TCP communication device on a microcontroller-based embedded platform, supporting all standard register types and integrating seamlessly with third-party clients, achieving 100% automated test coverage.
- Designed a high-performance Modbus TCP server enabling robust real-time communication over Ethernet and Wi-Fi.
- Applied MVC architecture to integrate a TFT display with event-driven controls, real-time visualization, and Figma-designed UI layouts boosting maintainability and adaptability across client environments.

ECE 495/496: Software Engineering **Durham, NC**
Teaching Assistant | Java, JUnit *Jan. 2025 - May 2025*
- Mentored 15+ students in building a strategic multiplayer trading game in Java, reinforcing modular architecture, test-driven development, and Agile practices.
- Led code reviews, delivering actionable feedback to improve code readability, logic efficiency, and maintainability.
- Guided teams to achieve 90%+ unit test coverage and 92% on-time sprint delivery by refining milestone criteria and assessing against real-world engineering standards.

Intel **Rio Rancho, NM**
Engineering Intern | React.js, Python, SQL *June 2024 - Aug. 2024*
- Developed an automated production alert system using React.js, Python, and SQL, reducing lot tracking time by 70% and accelerating issue response for engineers.
- Enhanced data integrity by mapping device identifiers across manufacturing processes, preventing information loss and improving product quality.

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 100+ hours and accelerating deployment for seismic networks.
- Engineered an embedded IoT system integrating an ESP32 microcontroller programmed in C++, geophone and an accelerometer to wirelessly transmit acceleration data via MQTT at 100 samples per second, achieving a 40% speed increase over previous designs, 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.

Duke Office of Information Technology **Durham, NC**
Software Engineer Intern | Python, Pandas, Geopandas *May 2023 - Aug. 2023*
- Developed an interactive, district-level dashboard for Duke's Nicholas School of the Environment to visualize malaria outbreaks across Peru with multi-year filtering and dynamic geographic mapping, enabling researchers and public health officials to analyze outbreak patterns in real time.
- Processed and analyzed 60,000+ rows of time-series climate and epidemiological data, uncovering strong correlations between El Niño/La Niña climate cycles and malaria spikes..
- Collaborated with environmental scientists in biweekly development cycles, iterating on feature requests, validating data accuracy, and delivering actionable visual analytics that directly informed ongoing public health research.

PROJECTS

Smart Basketball | Verilog, Assembly
- Real-time, interactive basketball game using a custom 32-bit, five-stage pipelined processor with hazard and bypass 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, 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.