Roshani Kumari Jha

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Education

University of New Haven – West Haven, CT — May 2025
Master of Science in Computer Science | GPA: 3.91/4.0

Lumbini Engineering College, Pokhara University – Nepal — Dec 2014
Bachelor of Engineering in Electronics and Communication | GPA: 3.72/4.0

Experience

IT Engineer, Chhinnamasta Hospital – Nepal — Jan 2022 – Nov 2022

- Improved hospital information systems by maintatining SQL databases and frontend interfaces for health records and inventory.
- Configured and maintained routers, switches, and firewalls; optimized network uptime through proactive monitoring, and reduced report generation time by 15% via data warehousing implementation and streamlined data analysis.

Lecturer, Shree Secondary School – Aamsal, Nepal — Jan 2018 – Jan 2022

- Supervised student projects in Python and MySQL, focusing on database-backed application development.
- Provided guidance on project structure, database design, and deployment basics.

Lecturer, Manmohan Memorial University – Nepal — Sept 2019 – Dec 2021

- Taught Electronics courses and supervised few student groups on Java and MySQL projects with Selenium testing, mentoring them on project structuring and collaborative version control (Git).

Lecturer, Softech Engineering College – Nepal — Mar 2015 – Dec 2017

- Taught Microprocessors and Embedded Systems, conducting hands-on lab sessions and practical experiments.
- Supported web-based student projects on online shopping platforms using HTML, CSS, and JavaScript.
- Mentored small student groups under the guidance of a senior faculty member.

Research Experience

Independent Researcher, Biomedical Image Segmentation – Connecticut, USA — May 2025 – Present

- Conducting a medical image segmentation study using the Kvasir-SEG dataset, establishing a strong foundation in biomedical imaging and deep learning.
- Evaluating the impact of advanced data augmentation techniques on U-Net model generalization and segmentation accuracy.
- Implementing and optimizing the segmentation pipeline in PyTorch; preparing results for academic publication.
- Demonstrating expertise in model robustness, data preprocessing, and experimentation in biomedical AI.

Master's Thesis Researcher, University of New Haven – West Haven, CT — Sept 2024 – May 2025

- Designed and implemented an SDN-enabled IoT edge network architecture using tree and mesh topologies to improve system reliability.
- Processed and analyzed latency data for URLLC traffic in Mininet-Ryu simulations, applying robust data processing techniques.
- Troubleshooted network performance issues using OpenFlow and Open vSwitch QoS, improving architecture efficiency and aligning with international standards.
- Achieved up to 60% latency reduction through edge-SDN integration and performance optimization.
- Relevant to real-time robotic perception systems requiring low-latency communication and rapid inference.

Projects

Real-Time Flight Telemetry Monitor Jan 2025 – Present

- Designed a real-time telemetry simulation system in C++17 with multi-anomaly detection and structured logging.
- Built modular components including TelemetrySimulator, detectAnomaly(), DataLogger, and a mission control loop.
- Supported CMake and manual build workflows for cross-platform compatibility and real-time telemetry visualization.

Swapify iOS App Jan 2025 – May 2025

- Developed a SwiftUI marketplace app on GCP, integrating Firebase Authentication and Firestore for real-time data sync.
- Designed scalable Firestore data models and optimized queries, reducing data processing time by 20%.
- Implemented GCP Cloud Functions and Data Engineering pipelines for efficient product and user data management.

Employee Payroll Management System Aug 2024 – Dec 2024

- Developed a secure web application for employee record management and payroll processing, following a Production System architecture.
- Implemented robust CRUD operations with form validation using Java.
- Designed and deployed a MySQL database for efficient data storage and retrieval.
- Achieved 99.9% uptime and improved data processing speed by 20% through optimized database design and clean code structure.

Indoor Navigation System (Mini Robotic Project) June 2014 – Dec 2014

- Designed a navigation aid using a 2051 microcontroller, TX/RX modules, and ultrasonic sensors to assist children with mobility challenges in navigating confined indoor spaces.
- Programmed in Assembly Language for real-time distance measurement, signal processing, and safety alerts.
- Recently (2025) extended the project with a web-based visualization prototype using HTML, CSS, and JavaScript to simulate pathfinding and obstacle detection.

Overload Monitoring System July 2014 – Nov 2014

- Developed an overload alerting system with 8051 microcontroller in 2014; currently(2025) extending it into a Java-based web dashboard for real-time load visualization and publication.

Skills

Frontend: HTML, CSS, JavaScript, jQuery, React, SwiftUI

Backend: Java, Node.js, Express.js, Firebase, MongoDB, MySQL, RESTful APIs

Programming Languages: JavaScript, Java, C, C++, SQL, NoSQL

Tools & Platforms: Selenium (Java), Git, GitHub, Xcode, Visual Studio Code, Word, Excel

Testing & Automation: Selenium with Java, Mininet, Ryu Controller, Open vSwitch, Manual & Automated Testing

ML & Deep Learning: PyTorch, TensorFlow (Basics), OpenCV, Keras

Embedded Systems: Arduino, 8051/8085, Assembly, Raspberry Pi, Sensors, VHDL (Basics)

Cloud Platforms: AWS, Azure, Google Cloud Platform

Scholastic Awards

Dean's List Scholar - University of New Haven (2023–2025)

Best Project Award — Nepal Telecommunication Authority (2014)

Academic Excellence & Dean's List Scholar — Pokhara University

UPE Honor Society (Top 30% in Computing) - The International Upsilon Pi Epsilon Honor Society