

Abhinna Manandhar

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Education

University at Buffalo, State University of New York May 2026

Master of Science in Computer Science and Engineering

- **GPA** 3.7/4.0
- **Coursework:** Algorithm Analysis and Design, Operating Systems, Modern Networking Concepts, Database Systems

Coventry University November 2023

Bachelor of Science with Honours (BSc. Hons) in Computing

- **GPA:** 4.0/4.0
- **Thesis:** Blockchain Technology to Improve Security and Accessibility of Electronic Health Records

Skills

Programming Languages: Python, Java, Go, TypeScript/JavaScript, C, C++

Databases: PostgreSQL, MySQL, MongoDB, Redis

Frameworks & Tools: REST, gRPC, GraphQL, FastAPI, Django, PyTest, Git

Systems: Linux/Unix, Distributed Systems, Docker, AWS S3, CI/CD, GitHub Actions, Grafana

ML & Data: Pandas, Matplotlib, Scikit-Learn, TensorFlow, Keras, PyTorch, LLM/GenAI Integration

Experience

Mid-Level Software Engineer, Krispcall – Singapore, Remote Aug 2024 – Jan 2025

- Implemented high-availability voice/telephony features (Call-Barging, Call-Whispering, and SMS-forwarding) to support 50,000+ minutes in daily call traffic using *Twilio* webhooks.
- Led the development of a billing microservice to decouple the payment workflows from the core monolith, serving *10,000+ users* and enabling *\$3M+* in ARR.
- Rearchitected the legacy billing system to minimize custom logic and improve system scalability by adopting native Stripe primitives (Payment Intents, Subscriptions, Metered Billing) and designing normalized *PostgreSQL* schemas.

Associate Software Engineer, Krispcall – Singapore, Remote Mar 2023 – Aug 2024

- Developed and maintained *GraphQL* and *gRPC APIs* for client and inter-service communication in *Python* with *FastAPI* by implementing *Repository* and *Unit-Of-Work design patterns* for data access abstraction and transaction management.
- Maintained *PostgreSQL* database migrations using *Alembic* and wrote optimized queries to minimize database overhead using *SQLAlchemy ORM*.
- Maintained *PyTest* test suites to improve code quality and test coverage by enforcing *SonarQube* quality gates in the *GitHub Actions CI/CD* pipeline.

Research Assistant, Dept. of Earth Sciences – University at Buffalo Apr 2025 – Present

- Developed a *YOLO* and *OpenCV* based computer vision pipeline to detect and label water-line in water-gauge images for the *CrowdHydrology* project to enable image submissions for citizen science.
- Integrated a *Gemini API* workflow to extract water-level measurements from labeled images, and optimized prompts and image preprocessing to reduce root-mean-square error.
- Reduced contibution webook latency by designing an asynchronous service layer with a *Redis queue* for ML pipeline execution, and managed deployments to *Linux* server.

Projects

UB Tycoon – UB Hacking 2025 MLH Best Use of Gemini API Winner

- Built an AI-powered semester gamification application using the Gemini API to parse syllabus PDFs and power an academic-advisor chatbot.
- Designed a MongoDB schema for storing game state, and implemented a NodeJS REST API integrated with a React client.

Ride Sharing Web & Mobile Application

- Developed a full-stack ride-sharing application, implementing the back-end using NodeJS and Express to build a REST API, and MongoDB to store application data.
- Integrated Google Maps Platform Services (Places, Directions, Distance Matrix) to calculate pricing and implement navigation.
- Developed a multi-platform client using Flutter (Android/IOS/WearOS) and ReactJS for web dashboard.

x86 Kernel Scheduler & User Programs (Pintos)

- Implemented a priority scheduler along with priority donation to mitigate priority inversion in C for the x86 Pintos kernel.
- Enabled user program execution by implementing stack-based argument passing and core system call handlers such as exec, wait, and file I/O.