Janak Sapkota

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Professional Summary

Backend-focused Computer Engineer with practical experience developing REST APIs, PostgreSQL databases, authentication systems, and scalable backend services.

Education

IOE, Pulchowk Campus, Tribhuvan University 2022 - 2026
Bachelor in Computer Engineering *Pulchowk, Lalitpur*

Relevant Coursework

AI/ML: Machine Learning, Deep Learning, Reinforcement Learning, Natural Language Processing
Mathematics: Linear Algebra, Calculus, Probability & Statistics, Discrete Mathematics
Systems: Operating Systems, Computer Networks, Distributed Systems, Database Management Systems, Software Engineering

Projects

Scalable REST API Backend | *Go, PostgreSQL* GitHub

- Built a **modular REST API backend in Go** with clean separation of **handlers, middleware, and data access layers**.
- Implemented **authentication, request validation, rate limiting, pagination, and structured JSON responses**.
- Used **optimistic concurrency control** and **database migrations** for reliable data consistency and deployment management.
- Optimized **database interactions and query execution** for improved backend performance.

LLM Workflow Orchestration System | *Go, PostgreSQL, Redis, Docker* Github

- Designed and implemented a **microservices-based backend platform in Golang** for orchestrating multi-step AI workflows.
- Built an **asynchronous distributed job processing system** using Redis queues, goroutines, and worker pools for concurrent task execution.
- Implemented **retry mechanisms, timeout handling, and fault-tolerant workflow execution** to improve system reliability.
- Developed **RESTful APIs** for workflow management, task scheduling, and inter-service communication.

Network Intrusion Detection System (NIDS) | *Go, gopacket, Linux, Concurrency* GitHub

- Developed a **Linux-based network monitoring system** for real-time traffic analysis and security monitoring.
- Implemented **low-level packet capture and inspection** using gopacket in Linux environments.
- Designed a **concurrent processing pipeline** to handle high-throughput network traffic efficiently.
- Performed **protocol-level analysis and anomaly detection** for identifying suspicious activities.
- Optimized for **performance, low latency, and efficient resource utilization** on Linux systems.

AI Driven Design Of Synthetic Antivenom Against Cobra Neurotoxins | *Python, RFdiffusion, AlphaFold2*

- Developed a computational pipeline to generate **protein binders targeting venom toxins** using generative AI models.
- Produced and screened multiple candidate structures, narrowing down high-quality designs through **structural validation**.
- Applied **AlphaFold2 and AlphaFold-Multimer** for structure prediction and interaction analysis.
- Evaluated outputs using **pLDDT and pTM scores** to ensure structural confidence and binding quality.

Technical Skills

Programming Languages: Python, Golang, SQL, C/C++
Databases: PostgreSQL, MySQL, Redis
Backend: REST APIs, Django, Django REST Framework
DevOps & Tools: Docker, Git, GitHub Actions, Linux

Certifications

Machine Learning Specialization | Coursera (Stanford / DeepLearning.AI)