Ritesh Raut

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Objective

I am a dedicated and passionate undergraduate Computer Science student with extensive research experience in Deep Learning, Natural Language Processing (NLP), RAG architectures, autonomous AI agents, and production-grade system development. Seeking to leverage advanced computational expertise to contribute to groundbreaking research in scientific computing and intelligent systems. I am experienced in TensorFlow, LangChain, Julia, Python, C++, Machine Learning, and developing scalable multi-modal AI solutions. I am open to learning and growing as I aim to pursue a Master's in Machine Learning to contribute to scalable scientific computing.

Education

Tribhuvan University | Institute of Science and Technology — Bhadrapur, Nepal
Bachelor of Science in Computer Science and Information Technology — *CGPA: 3.77*

Award: Ram Thapa Smriti Puraskar (Awarded for outstanding academic excellence at Tribhuvan University)

Research & Technical Experience

AI/ML Intern — August 2025 – November 2025
Huncha Digital — *Bhadrapur, Nepal*

- Engineered a scalable LangGraph React Agent, implementing robust backend logic to autonomously resolve 100+ daily user queries with 93% accuracy, significantly reducing manual support load.
- Developed a voice-based food ordering system leveraging NLP and speech recognition, increasing order processing efficiency by 30%.
- Implemented multi-modal AI architectures integrating text, voice, and retrieval intelligence to optimize user interaction flows.
- Collaborated with cross-functional teams to design and integrate multi-modal AI systems, aligning technical implementations with business requirements for text and voice intelligence.

Quantitative Analysis of Digital Infrastructure — Spring 2024 – Present
Academic Research on Bhadrapur Municipality

- Executed predictive modeling using Machine Learning algorithms (Regression & Clustering) on demographic data from 10 administrative wards to forecast service bottlenecks and optimize digital service delivery.
- Applied analytical skills to audit Nepal's National Identity (NNID) biometric architectures and cybersecurity protocols, proposing enhanced data protection mechanisms to mitigate identity fraud.
- Engineered dynamic Power BI dashboards to visualize citizen interaction patterns for a population of 70,000+, achieving a 20% increase in municipal work efficiency through data-driven resource allocation.

Projects

Cogni-chat: RAG-Based Document Analysis System | *Hugging Face Space* — June 2025 – October 2025

- Engineered a web-based Retrieval-Augmented Generation (RAG) application enabling conversational interaction with PDF, DOCX, and TXT files.
- Integrated FAISS vector stores with Hugging Face embeddings to achieve 95% context retrieval accuracy while reducing system response time by 25%.
- Automated the summarization of complex technical documents, accelerating the information discovery process by 85% compared to manual keyword searches.
- Deployed the solution on Hugging Face Spaces, ensuring high availability and seamless public access for document analysis.

AI-Powered Skincare Diagnostic System | *Computer Vision* — October 2024 – February 2025

- Developed and trained a custom Convolutional Neural Network (CNN) on diverse datasets, achieving a validation accuracy of 82% for skin type classification.
- Built a high-performance RAG-based chatbot using FastAPI to deliver personalized product recommendations, improving recommendation speed by 40%.
- Managed the full software development lifecycle (SDLC) from ideation to functional prototype, delivering a solution that addresses real-world consumer needs.

Community Interest Calculator | *Flutter Mobile App* — December 2023 – July 2024

- Architected and deployed a localized mobile application using Flutter, automating complex interest calculations for community finance groups.
- Eliminated manual data entry bottlenecks, resulting in a 95% reduction in calculation errors and ensuring financial data integrity.
- Designed an intuitive, mobile-first user interface (UI) that successfully scaled to support 2000+ active users.

Skills

Programming Languages: Python, C++, Julia, JavaScript, Dart, C#.
Scientific & ML Computing: TensorFlow, Scikit-learn, Pandas, NumPy, FAISS.
NLP & LLMs: LangChain, Hugging Face Transformers, RAG Architectures, SpaCy, NLTK.
Development & DevOps: Git, GitHub, FastAPI, Django, Linux/Unix environments.
Core Competencies: Deep Learning, Computer Vision, Transfer Learning, System Scalability.
Professional Skills: Strategic Problem Solving, Cross-Functional Collaboration, User-Centric Design, Technical Communication.
Languages: English, Nepali, Hindi (Fluent/Native).

References

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