

# REETI PRADHANANGA

Master's in Computer Science | Software Engineer

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## SUMMARY

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Software Engineer with a Master's in Computer Science and hands-on experience in building scalable backend services and computer vision applications. Expertise in Go, Python, JavaScript, and modern development practices, with a focus on building complex and highly available APIs. Strong background in software development, machine learning, computer vision, and predictive modeling.

## EDUCATION

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**M.S., Computer Science**, University of Louisiana at Lafayette, 4.0 GPA

January 2024 – May 2025

**B.E., Computer Engineering**, Tribhuvan University (*Batch Topper*)

November 2017 – April 2022

## SKILLS & TOOLS

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**Languages/Database:** Python, Go, PowerShell, JavaScript, C/C++, HTML, CSS, MySQL, PostgreSQL, MongoDB

**Tools:** Visual Studio Code, Google Colab, Jupyter, PyCharm, GitHub, GoLand, git, Postman

**Libraries/Frameworks:** Django, Express, Node.js, Gin, Echo, Pandas, NumPy, PyTorch, Scikit-Learn, TensorFlow, OpenCV

**AI/GenAI Tools & Frameworks:** OpenAI, Ollama, LangChain, FAISS, Chroma, HuggingFace

**Core Technical Skills:** Microservice Architecture, Asynchronous/Event-Driven Processing, API Development, Go Concurrency (goroutines, channels), Agile Methodologies, Machine Learning, GenAI, LLMs

## WORK EXPERIENCE

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**Graduate Research Assistant**, *University of Louisiana at Lafayette*

January 2025 - Present

- Developed computer vision models using OpenCV for real-time traffic video analysis, object detection, and tracking.
- Built predictive models using Python to analyze traffic flow and congestion.
- Integrated traffic simulation software (SUMO) with Python for traffic flow analysis to provide data-driven insights.
- Engineered future frame predictions using CNN and ConvLSTM for traffic forecasting.
- Engineered machine learning solutions for autonomous traffic monitoring systems, enhancing real-time decision-making capabilities and data-driven insights.

**Graduate Teaching and Research Assistant**, *University of Louisiana at Lafayette*

August 2024 - December 2024

- Conducted data analysis & predictive modeling for biomedical datasets using Python.
- Conducted research on Acute Mountain Sickness (AMS) prediction using classical machine learning and Hyperdimensional Computing (HDC).
- Led hands-on Python programming labs, debugging code, and mentoring students.

**Backend Developer**, *RARA Labs*

April 2022 - December 2023

- Developed and optimized scalable backend services for fintech applications using Go.
- Streamlined API development workflow by implementing GraphQL endpoints alongside RESTful services, reducing integration complexity, and improving data access patterns.
- Engineered robust authentication systems with JWT integration, establishing comprehensive permission-based authorization frameworks for secure data access.
- Improved database query performance in PostgreSQL through indexing & query optimization.
- Leveraged Go's concurrency model with goroutines & channels to reduce response times.
- Developed custom middleware solutions for request management, implementing sophisticated throttling mechanisms and detailed system logging.
- Led backend infrastructure modernization initiatives, focusing on scalability and maintainability while mentoring junior developers in Go best practices.

- Developed interactive web applications using JavaScript, HTML, and CSS.
- Built and maintained RESTful APIs using Node.js & Express.
- Engineered responsive web applications and RESTful APIs using Node.js stack, implementing robust solutions for complex business requirements.
- Streamlined development workflows by integrating modern JavaScript frameworks and optimizing API performance for enhanced user experience.

## PROJECTS

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### **Insurance Agent** (*Python, LangChain, OpenAI, FAISS, ChromaDB, Gradio*)

- Developed advanced QA pipelines combining LLMs (OpenAI, Ollama) with RAG (Retrieval-Augmented Generation) techniques.
- Built a virtual corporate assistant capable of accurately answering queries.

### **Sentiment Analysis with Bi-LSTM** (*Python, TensorFlow, Keras, Pandas*)

- Implemented Bi-LSTM (Bidirectional Long Short-Term Memory) for sentiment analysis.
- Tested on Amazon review datasets, achieving improved sentiment classification accuracy.

### **Twitter Sentiment Analysis On Gadget Reviews** (*Django, ReactJS, Pandas, PostgreSQL*)

- Built a real-time sentiment analysis tool using Naïve Bayes Classifier, analyzing tweets about gadgets.
- Integrated Twitter API for live data collection and preprocessing.

### **Hamro Krishi** (*NodeJS, HTML, CSS, MongoDB*)

- Developed a full-stack marketplace for farmers to list and sell products.
- Implemented real-time chat functionality to enhance user engagement.

### **Job Recommendation System** (*Django, Bootstrap, PostgreSQL*)

- Created a web application using a Content-Based Filtering Algorithm to recommend IT-related jobs based on user skills and preferences

### **Roll with It** (*C++, Graphics.h*)

- Developed a single-player car game where the speed increases with each level, showcasing programming skills and game design

## RESEARCH & PUBLICATIONS

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- **AMS-HD: Acute Mountain Sickness Detection with Hyperdimensional Computing** (*ISCAS 2025 – Accepted*)
- **Digital Twin-Aided Municipal Traffic Control** (*SUMO Conference 2025 – Accepted*)

## AWARDS

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**KulRatna Tuldahar Award** (*B.E. University Topper, Undergraduate*)