AMAYURU AMARASINGHE

SOFTWARE ENGINEER

PROFILE

Results-driven and detail-oriented Software Engineer with hands-on experience in full-stack development, distributed systems, cloud platforms, and AI-powered applications. Adept at building scalable, high-performance solutions across web, mobile, and game development environments. Recognized for strong problem-solving, teamwork, and a proactive approach to delivering innovative software products.

CONTACT

Phone: +94 74 1112634

Email: amarasingheau@gmail.com

Address: Galle, Sri Lanka

Portfolio: Linkedin | Github

WORK EXPERIENCE

Associate Software Engineer | January 2025 - Present

Metarune Labs (Pvt) Ltd

- Designing and developing production-grade distributed systems and AI-driven platforms.
- Optimizing backend services for scalability and performance while contributing to frontend improvements.

Intern Software Engineer | June 2024- December 2024

Metarune Labs (Pvt) Ltd

- Contributed to projects including messaging platforms, Unity-based game development, and AI agent orchestration.
- Integrated cloud services and bug-tracking tools, gaining exposure to scalable backend architecture.

Full Stack Developer | April 2024 - July 2024

Focus Realm, Rajasthan, India

- Developed responsive web applications with modern frameworks and cloud technologies.
- Collaborated in agile teams, ensuring timely delivery of client-focused solutions.

Freelancer | April 2023 - January 2024

Fiverr

- Delivered AI and computer vision–based solutions for global clients.
- Collaborated directly with clients to design, implement, and deploy custom software solutions tailored to research and content creation needs.

ACADEMIC HISTORY

University of Ruhuna | 2021-2025

B.Sc. Engineering (Hons) in Computer Engineering

- Current GPA: 3.57/4.0

Mahinda College, Galle | 2005-2020

GCE Advanced Level Examination (Physical Sciences)

- 3 A's

INDUSTRIAL & RESEARCH PROJECTS

Shop Assist - Metarune Labs (Pvt) Ltd

- Designed and implemented responsive frontend components and REST APIs to power an e-commerce engagement plugin.
- Integrated LiveKit SDK into the existing Shop Assist project, enabling real-time video calls and chat features compatible with its current architecture.
- Optimized backend services for scalability, enabling the plugin to handle concurrent video sessions without downtime.
- Technologies - React,TypeScript, Supabase, Web Sockets, Live Kit, Google Cloud Platform

Staryo - Metarune Labs (Pvt) Ltd

- Developed and deployed a creator-to-fan messaging platform for the USA-based North Star Boys band, enabling direct interaction with their global fanbase.
- Engineered scalable chat architecture to support thousands of simultaneous users with minimal latency.
- Contributed to both frontend and backend development, ensuring smooth synchronization of real-time messages, notifications, and media sharing.
- Enhanced fan engagement by implementing push notifications, efficient socket-based communication, and activity feeds that increased retention and user activity.
- Collaborated with cross-functional teams to align platform features with the band's branding and fan engagement strategy.
- Technologies - NextJS, TypeScript, MongoDB, Redis, Pusher, Prisma, Docker

Draftables - Metarune Labs (Pvt) Ltd

- Enhanced gameplay mechanics as a Unity Developer for an American football game with real-time multiplayer support.
- Integrated Backtrace error monitoring, increasing precision of bug reports and reducing debugging time by ~30%.
- Deployed callable backend functions (e.g., player removal, game resets) to improve system reliability.
- Leveraged Google Cloud Platform to support seamless bug reporting, scalability, and near-zero downtime deployments.
- Technologies - Unity, C#, Firebase, Google Cloud Platform

AI Agent Orchestration System - Research Project Associated with Metarune Labs (Pvt) Ltd

- Architected a distributed multi-agent AI system for real-time financial research and task automation.
- Implemented semantic routing with NATS messaging and CrewAI, ensuring efficient load balancing across agents.
- Developed production-grade orchestration pipelines using Python and FastAPI, containerized with Docker for portability.
- Delivered real-time insights by integrating OpenAI and MCP for advanced financial analysis workflows.
- Technologies - CrewAI, CoAgent - Distributed Multi AI Agent Orchestration, NATS, Python, MCP, Distributed Computing, React, Type Script, Flask, ChromaDB

Final Year Undergraduate Project - Agentic RAG Application and Intelligent Document Processing Toolkit (In collaboration with Lanka Data Foundation)

- Collaborated with Lanka Data Foundation to build a scalable information retrieval and legal document analysis system for Sri Lankan Government Gazettes and Acts.
- Fine-tuned domain-specific LLMs for government/legal text, improving accuracy of document retrieval by ~25%.
- Developed Graph + Adaptive RAG pipeline for intelligent data extraction, enabling continuous conversational queries
- Pioneered Vector Lakes concept for efficient government-scale text storage and retrieval as a proof of concept.
- Technologies - Retrieval-Augmented Generation, Python, AI Agents, Neo4j, Unsloth, OCR, Docling, Prompt Engineering, Docker, Microsoft Graph Rag, Landing AI - Agentic Information Extraction

ACADEMIC PROJECTS

BusGo – Smartphone Bus Ticketing System

- Designed and developed a mobile bus ticket booking application using Flutter for cross-platform support.
- Integrated Firebase for authentication, payments, and real-time seat availability updates.
- Enabled QR-based ticket validation to reduce manual errors and improve boarding efficiency.
- Improved user experience by implementing push notifications for ticket confirmation and journey reminders.
- Technologies - Flutter, Firebase, Stripe

Leon's Kitchen – Restaurant Management System

- Delivered a comprehensive restaurant management system using the MERN stack (MongoDB, Express, React, Node.js) for the web dashboard.
- Improved restaurant operations by automating order tracking and reducing manual coordination.
- Implemented role-based authentication for staff, admin, and customers.
- Enabled online ordering, table reservations, and kitchen workflow management.
- Technologies - MERN, MongoDB, Google Cloud Platform, Docker, AWS, Pay Here

Parallelized Scientific Computing with MPI & OpenMP - 3D Heat Diffusion Simulation

- Implemented a parallelized 3D heat diffusion solver using MPI and OpenMP to model heat transfer in large grids.
- Achieved up to 6× speedup compared to sequential execution by optimizing load balancing and reducing inter-process communication.
- Benchmarked performance on an HPC cluster, analyzing scalability with increasing grid sizes and processor counts.
- Technologies – C/C++, MPI, OpenMP, Linux, HPC Cluster, MPI, CUDA

ShopMate – Distributed E-commerce Platform

- Designed and implemented a microservices-based e-commerce platform, separating core domains such as user management, order processing, and analytics.
- Developed scalable backend services using Node.js and Express, enabling independent service deployment and horizontal scaling.
- Implemented inter-service communication via REST APIs, ensuring loose coupling, maintainability, and clear service boundaries.
- Containerized services using Docker and orchestrated deployments with Kubernetes, improving service resilience, scalability, and deployment consistency.
- Built an analytics service to track user behavior and system metrics, supporting data-driven insights and performance monitoring.
- Technologies - Node.js, Express, Microservices, REST APIs, Docker, Kubernetes, PostgreSQL

Colombo International Book Fair (Online Stall Management System)

- Designed and developed an online multi-portal system for managing publisher stalls at the Colombo International Book Fair.
- Implemented Vendor (Publisher), Admin, and Customer portals, enabling stall management, book listings, and order processing.
- Applied software architecture principles including separation of concerns, modular design, and layered architecture to improve maintainability.
- Built RESTful backend services to handle vendor onboarding, inventory management, and end-to-end ordering workflows.
- Developed responsive frontend interfaces using React, ensuring role-based usability and scalability.
- Evaluated architectural trade-offs with a focus on scalability, extensibility, and long-term system evolution.
- Technologies - Spring Boot, React, Node.js, REST APIs, Layered Architecture

ACADEMIC RESEARCH

GAN-Inspired Retrieval-Augmented Generation for Legal Domain

- Architected a novel GAN-inspired RAG framework utilizing a Generator-Discriminator architecture to iteratively optimize information retrieval for unstructured legal documents.
- Engineered a Generator Agent to decompose queries into legally precise sub-questions, executing parallel semantic and hybrid searches to expand retrieval coverage.
- Developed a Discriminator Agent with adversarial feedback loops to evaluate answer coherence, triggering re-learning cycles to minimize hallucinations
- Optimized the embedding pipeline using Legal-BERT and dynamic paragraph-based chunking in ChromaDB, enhancing context retention for complex legal texts.
- Technologies - Python, LangChain, Legal-BERT, Qwen-4B (QLoRA Fine-tuning), ChromaDB, Flask, OpenAI API, Generative Adversarial Networks (GANs).

FREELANCE PROJECTS

Heart Attack Risk Prediction

- Developed machine learning models using Logistic Regression and SVM to predict heart attack risk.
- Trained models on healthcare datasets with >10,000 records, achieving over 80% accuracy.
- Applied feature engineering to extract medically relevant attributes such as cholesterol, blood pressure, and BMI.
- Designed the solution as a decision support tool for healthcare professionals.
- Technologies - SVM, Logistic Regression, Predictive Modeling

Video Pausing Program (Freelance - Fiverr)

- Built a computer vision-based application in Python that detects user mouth movements to control video playback.
- Implemented real-time image processing pipelines with OpenCV.
- Automated video pausing during conversations, reducing manual interruptions.
- Delivered as a freelance project for a content creator to enhance usability during online lectures.
- Technologies - OpenCV, Python

Stanford Dog Breed Detection (Freelance - Fiverr)

- Developed and trained a convolutional neural network (CNN) using TensorFlow on a dataset of 20,000+ labeled images.
- Achieved high accuracy in classifying over 100 dog breeds.
- Deployed the model with a simple user interface for easy image uploads and predictions.
- Provided as a freelance solution for a research project.
- Technologies - OpenCV, Python

CERTIFICATION

CODEFEST - AI Sprint Sysco Labs Finalist | 2024
SLIIT

Neural Networks and Deep Learning | 2023
Stanford University

Foundations of Cybersecurity | 2024
Google

Supervised Machine Learning: Regression & Classification | 2023
Stanford University

Python Data Structures | 2021
Coursera

AWS Cloud Technical Essentials | 2024
AWS - Coursera

Pretraining LLMs | 2025
Coursera

Introduction to Cybersecurity | 2021
Cisco

Introduction to Computer Vision | 2023
MathWork

LEADERSHIP & EXTRA-CURRICULAR

Captain & Coach | 2016 - 2018
Mahinda College Quiz Team

Vice President Logistics | 2023 - 2024
Prestige 2.0

Member | 2023
University Tennis Team

Team Leader | 2023 - 2024
AIESEC, University of Ruhuna

REFERENCES

Dr. P.D.C Perera
Senior Lecturer, Department of Electrical & Information Engineering
University of Ruhuna | chandana@eie.ruh.ac.lk | +94912245765-6

Dr. Kushan Sudheera
Senior Lecturer, Department of Electrical & Information Engineering
University of Ruhuna | kushan@eie.ruh.ac.lk | +94912245765-6