

ANIRUTH KARTHIK

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EDUCATION

Amrita Vishwa Vidyapeetham

Coimbatore, Tamil Nadu

Bachelor of Technology in Computer Science – CGPA: 8.63

Expected July 2028

- Coursework: Data Structures & Algorithms, Operating Systems, OOP, Computer Organization & Architecture, Discrete Mathematics, Linear Algebra

EXPERIENCE

Software Developer Intern

Remote

GIEOM Business Solutions Pvt. Ltd

Apr 2026 – May 2026

- Built backend pipelines to ingest, transform, validate, and convert workflow data across JSON, XML, XLSX, and CSV, ensuring schema interoperability across business systems
- Integrated speech-to-text and text-to-speech services via backend REST APIs; extended BPMN diagramming tooling to support embedded text and image content

Research Project Member

Jan 2025 – Present

Amrita Vishwa Vidyapeetham – Knowledge Engineering & Semantic Computing TAG

Coimbatore, Tamil Nadu

- Applying static binary analysis and structural feature extraction to malware samples, contributing to threat-detection research aimed at reducing false-negative rates

TECHNICAL SKILLS

Languages: Go, C++, Python, TypeScript, Java, C, SQL

AI & ML: Reinforcement Learning (PPO), GNNs, LLM Applications, AI Infrastructure, Multi-Agent Systems, PyTorch

Backend & Systems: REST APIs, WebSockets, Microservices, Concurrency, Event-Driven Architecture, Docker, Linux

Databases: PostgreSQL, SQLite, Redis

Tools: Git, CMake, React, Next.js

SELECTED PROJECTS

Mini Metro AI: GNN + RL & Simulation Engine | Go, Python, PyTorch, CGO, WebSockets | github.com/AniruthKarthik/mini-metro

- Engineered a deterministic Go simulation engine with A* passenger routing, CGO bindings for vectorized Python RL environments, and a WebSocket server for real-time visualization
- Built an RL pipeline (PPO, GAE, recurrent LSTM) with a 2-layer Graph Attention Network and potential-based reward shaping across a 4-stage curriculum over 4 city topologies

LLM Orchestrator | Go, TypeScript, PostgreSQL, WebSockets, Docker | github.com/AniruthKarthik/llm-orchestrator

- Architected a Go DAG execution engine using topological sort to parallelize multi-agent AI workflows, with automatic retries and stage-level checkpointing
- Built a layered AI infrastructure system with token-aware context management and pluggable LLM providers (OpenAI, Anthropic, Groq, Gemini) behind a unified API

VFI: Video Frame Interpolation Suite | C++, Python, PyTorch | github.com/AniruthKarthik/vfi

- Built a C++ motion estimator with multi-scale block matching, accelerating interpolation 8× via SIMD/multithreading; added a PyTorch RIFE model as a GPU-accelerated alternative

qrtunnel | Python, SSH, TCP/IP, Networking | github.com/AniruthKarthik/qrtunnel

- Built a cross-platform file transfer tool with LAN/WAN dual-path routing via a local TCP server and SSH reverse tunnels behind NAT; published to PyPI across 8 releases with CI/CD

Open Source Contributions | Go, TypeScript, PostgreSQL | github.com/AniruthKarthik

- [excalidraw/excalidraw](#) (70k+ stars): implemented a highlighter tool with blend-mode rendering and responsive toolbar slots
- [doltgresql](#): fixed PL/pgSQL substitution bugs to match PostgreSQL wire protocol; [hasmcg/hasmcg-ce](#): enforced 32-char minimum JWT secret validation
- [gomods/athens](#): added DB param to Redis Sentinel SingleFlight config; [voss-labs/vask](#): centralized TUI error handling and OSC 8 hyperlink support; [purpleidea/mgmt](#): distributed config management fix; and more at github.com/AniruthKarthik