

Nakul Adithya SP

Software Engineering & AI Student

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Professional Summary

Artificial Intelligence and Data Science undergrad passionate about building production-oriented software across systems programming, backend infrastructure, mobile applications and AI. Experienced in designing end-to-end software using Rust, Python, Flutter, FastAPI and modern AI tooling with a focus on scalable architecture, automation and evidence-driven engineering.

Technical Skills

Languages: Rust • Python • Java • SQL • JavaScript • Dart

Frameworks: FastAPI • Flutter • React • Node.js

AI: TensorFlow • Whisper • OpenCV • Local LLMs

Tools: Git • Docker • Linux • SQLite • PostgreSQL • FFmpeg

Flagship Projects

Hill - Developer Runtime for Linux [Rust, Tokio, SQLite, TOML, Unix Domain Sockets, Serde, Clap]

- Built a Rust runtime daemon for workspace lifecycle management.
- Designed Unix domain socket IPC for CLI-daemon communication.
- Implemented SQLite persistence for snapshots and sessions.
- Added TOML-based project configuration.
- Published versioned releases with semantic versioning and comprehensive documentation.

Project Kappa - Territory Running Platform [Flutter, FastAPI, SQLite, Riverpod, Dio, H3 Spatial Indexing]

- Developed a mobile-first location-based game where users capture and defend territories through outdoor running.
- Designed offline-first synchronization with local SQLite storage and background sync.
- Implemented GPS validation and anti-cheat mechanisms for reliable run tracking.

- Engineered anti-cheat validation and spatial game mechanics enabling persistent territory ownership and progression.

Decision Learning Engine (DLE) - AI-Powered Behavioural Intelligence Platform [Python, FastAPI, pandas, pytest, Uvicorn, PowerShell, JSON]

- Built an evidence-driven platform for analysing trading behaviour beyond P&L.
- Designed a modular pipeline for behavioural evidence extraction and insight generation.
- Developed synthetic benchmark personas to validate behavioural reasoning.
- Generated explainable reports with traceable, evidence-backed insights.

ClipForger - AI-Powered Video Captioning & Processing Pipeline [Python, FastAPI, FFmpeg, Whisper, Groq API, Gemma, OpenRouter]

- Built an end-to-end AI pipeline for automated short-form video processing.
- Integrated speech recognition, caption generation, scene processing, and GPU-accelerated rendering.
- Designed modular services for transcription, segmentation, caption styling, and video export.
- Implemented multiple AI model providers with automatic fallback mechanisms.

Automated Trading System - Algorithmic Trading Research Platform [Python, Pandas, NumPy, FastAPI, SQLite]

- Built a modular research platform for systematic trading strategy development.
- Implemented paper trading with portfolio management and order simulation.
- Designed a scoring engine using technical indicators including EMA, RSI, momentum, and volume.
- Developed backtesting workflows supporting multiple market conditions.

Education

Karpagam Institute of Technology

Expected 2028

B.Tech Artificial Intelligence and Data Science

Achievements

- Topper 2% (99%) – NPTEL Human Computer Interaction.
- Second Place – SRISTI'2K26 National-Level Paper Presentation Competition.
- Winner – Zonal Level Table Tennis Tournament.
- Runner-up – District Level Table Tennis Tournament.
- Competed in the Open State Table Tennis Championship.