

Akilesh A S

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Experience

- AI Researcher**, NeoNix AI | *Chennai, TN* (Jun 2025 – Present)
- Engineered and optimized deep learning architectures through quantization, fine-tuning, and custom IR/compiler development, delivering highly efficient, scalable, and reliable AI inference solutions.
 - Conducting research on neurosymbolic AI, XAI, and reinforcement learning to advance model interpretability and reasoning.
- Quant Researcher Intern**, GoGoSoon | *Chennai, TN* (Sept 2024 – Apr 2025)
- Enhanced predictive accuracy by 30% and simulated returns by 25% by architecting machine learning trading algorithms, reinforcement learning models, and genetic programming on real-world financial data.
 - Deployed efficient LLM-driven market agents, reducing decision latency by 40% and significantly expanding strategy coverage.
- Web Developer Intern**, JClick Solutions | *Kanyakumari, TN* (Apr 2023 – Jul 2023)
- Created highly responsive and interactive web applications using React, Material-UI, and Node.js, incorporating real-time features, modern UI/UX design principles, and cross-platform functionality, increasing average user session duration by 30%.
 - Integrated multiple API and complex backend logic, cutting data processing time by 35% and improving system throughput by 20%.

Projects

- DroneKit Python Extension (dkitx)** | *PyMAVLink, MAVLink2, SITL, ArduPilot Firmware* (github.com/akileshas/dkitx)
- Architected UAV control software using PyMAVLink and MAVLink2, strengthening reliable UAV-ground communication, enabling SITL testing, and facilitating seamless integration with ArduPilot firmware for efficient automated real-time mission management.
 - Implemented multithreaded routing, real-time synchronization, and event-driven APIs to support concurrent mission management.
- MicroDet** | *TinyGrad, PyTorch, DeepStream SDK, TensorRT* (Official Submission @ NIDAR 2025)
- Designed and implemented a lightweight computer vision model (<1 GFLOP) for real-time on-board inference, leveraging the NanoDet backbone fused with YOLO-style detection heads and optimized feature pyramids for efficient object detection.
 - Refined the architecture with depthwise convolutions and multi-scale fusion, achieving fast, accurate inference on edge devices.
- GenAlpha** | *NetworkX, GPLEarn, PyGAD* (Internally Developed @ GoGoSoon)
- Constructed a robust, scalable graph-based GP system to evolve alpha strategies, boosting the Sharpe ratio by 30%.
 - Accelerated convergence by 40% using uniform crossover and Gaussian mutation strategies on DAGs for efficient alpha evolution.
- Alarm RPI** | *Bash, Linux ARM, Arch Linux, UNIX, Raspberry Pi* (github.com/akileshas/alarm-rpi.sh)
- Automated Arch Linux ARM installation framework for RPI with interactive disk setup and staged filesystem extraction.
 - Integrated package management, caching, and kernel retrieval with modular logging and monitoring for efficient ARM provisioning.
- AgriSmart** | *NextJS, React Native, Django, PostgreSQL, PyTorch, Twilio* (Official Submission @ SIH 2024)
- Established a data-driven platform delivering actionable farm insights by scraping and aggregating large-scale agricultural data.
 - Trained a DL model with multi-head causal FlashAttention to predict fertilizer needs and crop earnings, increasing yield 35%.

Technologies

Languages: C, C++, Python, JavaScript, TypeScript, Lua, SQL, Golang, Rust, CUDA, Nix, Haskell, ReScript, Futhark.

Technologies: Functional & Object/Array-Oriented Programming, ML, DL, DSL, NLP, LLMs, GenAI, VLMs, CI/CD, RAG, MLOps, XAI, GPU & DL Compiler Systems (Inference & Grad Engines, Optimization), Containerization, MPK, RL, DRL, UNIX, POSIX, Linux (Arch, Nix, Debian), Parallel/Distributed/Edge Computing, Functional DL, SLM, WebSockets, WebRTC, RPC, DNS, RESTful APIs, Small RL, Quantisation, Reverse Proxies, SSR/CSR, LLM Agents, MCP, Drone/Socket Programming, Swarm Robotics, Path Planning, Caching, Computer Vision, Transformers, Intermediate Representation, API Designs, Genetic/Quant Algorithm, CEP Engine, Algo Trade, FLM.

Frameworks & Libraries: PyTorch, FastAI, TinyGrad, TensorFlow, NLTK, Keras, SpaCy, TorchCodec, FFmpeg, GStreamer, DeepStream, PyGAD, OpenGL, LLVM, OpenCL, MLIR, Vulkan, EGL, HasTorch, tch-rs, Helion, Mirage (MPK), Triton, NCCL, NVSHMEM, Luminal, CuTe DSL, CUTLASS, LeanRL, cuBLAS, GEMM, TorchTitan, SGLang, TensorRT, Nix Flake, tRPC, gRPC, Axum, MicroGrad, AutoGrad, GPLEarn, Matplotlib, SeaBorn, Polars, Pandas, NumPy, NextJS, NodeJS, ExpressJS, React Native, NetworkX, ClangD, Docker, FastAPI, MultiProcessing, Threading, Requests, Flask, PostgreSQL, vLLMs, TGI, LLaMa.cpp, DeepSpeed, DVC, Kafka, OmNix, NGiNX, MLFlow.

Tools: Git, JJ-vcs, Docker, Window Manager (Stacking, Tiling, Scroller), Anaconda, TMUX, NeoVim, Nix, Home Manager, Colab.

System Design: Concurrency, Multithreading, Load Balancer, Rate Limiting, Asynchronism, Message Queues, Background Jobs.

Achievements

- 2025 — **NIDAR Finalist (WIP):** Built an offline drone swarm for large-scale human detection and safety kit delivery in disasters.
- 2024 — **SIH Finalist:** Designed a data-driven mobile app to optimize fertilizer use, significantly boosting overall efficiency by 30%.
- 2024 — **Best Payload Dropping Award - ADDC:** Secured payload with precision, achieving 81% accuracy at the bullseye target.
- 2024 — **Electrothon Winner:** Devised autonomous drone for post-disaster crack detection, improving building safety by 40%.
- 2023 — **iDEX Disc X Challenge Finalist:** Built an autonomous system for landslide detection, boosting prediction accuracy by 35%.

Volunteering

- 2025 — **Computer Vision Workshop – CDSR Lab:** Conducted a session on computer vision fundamentals for Japanese students.
- 2024 — **Linux Workshop – Takshashila:** Conducted a hands-on session on Linux and UNIX for 50+ participants across colleges.

Communities

- Arch Linux Tester
- TinyGrad Contributor
- Juspay (*HyperSwitch*) Open Contributor

Education

Chennai Institute of Technology (Sept 2023 – Present)

BE in CSE (AI-ML)

GPA: 9/10