Alen Mangattu

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Education

Politecnico di Milano — **Milan, Italy**
B.Sc. Computer Engineering (Ingegneria Informatica), expected Jul 2029 — *Sep 2026 – Present*

ITIS Nullo Baldini — **Ravenna, Italy**
Diploma in Informatics and Telecommunications — *Sep 2021 – Jun 2026*

Technical Skills

Languages: Python, TypeScript/JavaScript, Java, C, PHP, SQL, Swift, Assembly

Frameworks / ML: PyTorch, Next.js, Vue.js, Flutter, Spring Boot, AppKit, LiteLLM

Systems / Infrastructure: Linux, Git, Docker, AWS, Nginx, PostgreSQL, MySQL, Redis, SQLite

Engineering: LLM agent systems, inference workflows, backend services, REST APIs, relational data modeling, caching, automated testing

Research & Professional Experience

BAInSA – Projects Division — **Milan, Italy**
Student AI Researcher – Agent Systems & LLM Infrastructure — *Oct 2026 – Present*

- Investigating latency and execution efficiency in tool-using language-model agents, examining model–tool orchestration, state management, and critical-path overhead in multi-stage workflows.
- Working on performance-oriented agent harness and model-adaptation pipelines, exploring asynchronous scheduling, parallel execution, and evaluation of end-to-end latency and reliability trade-offs.

Coopolis S.p.A. — **Ravenna, Italy**
Software Engineering Intern – Internal Tools & Infrastructure — *Feb 2025 – Apr 2025*

- Developed and deployed an internal Nginx reverse-proxy configuration platform using PHP, MySQL, and Vue.js, consolidating repetitive infrastructure changes into one workflow.
- Owned database schema, backend, frontend, and deployment end-to-end, converting a manual infrastructure-maintenance process into a production internal tool.

Selected Projects

MMFCUA – Procedural Memory for Computer-Use Agents — **Jun 2026**
Python, SQLite, Swift/AppKit, LiteLLM, PyAutoGUI

- Built a computer-use agent that turns successful UI traces into reusable procedural memory, using append-only trajectories, confidence-gated admission, deduplication, and exact/lexical/embedding retrieval over SQLite.
- Separated action execution from final-state verification; implemented screenshot-based recovery, constrained desktop actions, durable state, and 23 unit tests for retrieval, admission, rejection, and persistence.

gcli.io – Multi-Provider AI Developer CLI — **Aug 2025 – Oct 2025**
Python, Next.js, PostgreSQL, Redis, AWS

- Built and deployed a terminal-first AI developer product integrating multiple LLM providers, with a Python backend, relational persistence, Redis caching, web interface, and cloud infrastructure.
- Engineered the system end-to-end, spanning provider/API integrations, backend services, data models, frontend, and deployment.

Machine Learning Architecture Implementations — **Jun 2025 – Aug 2025**
PyTorch | GPT-2 124M, DDPM, Diffusion Transformer

- Reimplemented GPT-2 124M, DDPM, and a Diffusion Transformer from research papers in PyTorch, including core architectures and training/inference components.
- Open-sourced and documented the implementations; DDPM and DiT repositories have received 12 GitHub stars.

Raydium Trading Bot — **Mar 2025 – Apr 2025**
Java, TypeScript, PostgreSQL, Redis

- Engineered a Telegram-based trading interface with automated copy-trading rules, limit orders, live P&L tracking, and persistent portfolios through Raydium integration.
- Modeled users, wallets, holdings, transactions, and execution rules across PostgreSQL/Redis-backed services.

Additional

Languages: Italian, English **Interests:** AI systems research, low-latency infrastructure, developer tools, quantitative systems