

NISA MAASOGLU – Software Engineer

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ABOUT ME

I work in artificial intelligence, backend and full-stack web technologies. In Python I build RAG pipelines, LLM-based tool-calling agent architectures, REST APIs and WebSocket services; with PHP and Laravel I work on database design, API development and authorisation flows.

I also have hands-on experience in signal processing, computer vision and embedded systems. I focus on producing reliable and maintainable software, drawing on analytical thinking, problem solving and a habit of picking up new technologies quickly.

TECHNICAL SKILLS

Languages: Python, PHP, C++, C#, JavaScript, SQL

AI and Machine Learning: RAG, tool-calling agents, LLM APIs, vector search, scikit-learn, OpenCV, librosa, signal processing

Backend: FastAPI, Flask, Laravel, RESTful APIs, WebSockets (aiohttp), asyncio

Frontend: JavaScript, HTML/CSS, Streamlit, PyQt6

Data: Pandas, NumPy, MySQL, SQLite, Folium

Tools and Practices: Docker, Git, GitHub Actions (CI), pytest, ruff, Linux, MVC, unit testing

Embedded Systems: Arduino, ESP32, C++ firmware, serial communication

EXPERIENCE

Software Engineering Intern - BizYaz Bilisim ve Teknoloji | July - August 2024

- Built a company management panel with PHP and Laravel; designed the database architecture, the CRUD operations and the role-based access control (RBAC) flows end to end.
- Designed a single-page application interface and integrated it with the RESTful API endpoints, developing the product from the first commit through to handover.
- Managed the process with Git and set up a codebase structured around MVC principles that could be extended easily.

SELECTED PROJECTS

All my projects and their source code: github.com/nisamaasoglu

TerraScope - Urban Resilience and Climate Simulation | Final-year project, June 2026

Python, Streamlit, Folium, Pandas, NumPy, REST API

- Built an interactive urban resilience and climate risk simulation platform covering all 81 provinces of Türkiye and every district of Istanbul.
- Designed a modular data engine (CityDataEngine) combining live air quality (AQI) and meteorological data from the Open-Meteo REST API with topography, water index and seismic risk layers.
- Implemented a decision engine (UrbanDecisionEngine) projecting 2026-2050 scenarios from demographic pressure and industrial growth parameters, producing a resilience score and financial eco-damage estimate; built a dynamic heat-map interface with Streamlit and Folium.

Titulus - Web Platform for a Law Practice | July 2026

PHP, JavaScript, JSON, Apache | avukatmetinmaasoglu.com

- Delivered a live system for a real client and continue to maintain it: a searchable legislation library, a daily headline feed pulled and cached from resmigazete.gov.tr, and a set of practical calculators.
- Built a database-free admin panel that the non-technical client operates unaided; he manages all the content himself.
- Designed the security layer from the ground up: bcrypt password storage, brute-force lockout, per-session CSRF tokens, path-traversal validation and LOCK_EX concurrent write protection.

Anamnesis - Retrieval-Grounded AI Assistant | July 2026

Python, FastAPI, RAG, tool-calling agents, NumPy, Docker

- Built an information assistant that answers only from the passages it retrieved, naming the source document and section behind every claim.
- Designed a tool-calling agent limited to five read-only tools, together with a safety layer that runs before the agent and refuses risky questions; the system has no write path at all, and this is verified by a test.
- Set up a chunking and cosine-similarity retrieval pipeline; an offline mode runs without an API key and states in every response which provider produced the answer.
- Run the pytest suite together with ruff on GitHub Actions across a Python 3.10-3.12 matrix; the project is containerised with Docker.

LetheFS - Autonomous Forgetting File System | May 2026

Python, FastAPI, WebSockets, SQLite, vanilla JavaScript

- Implemented a spaced-repetition algorithm applying the Ebbinghaus forgetting curve to compute a live recall score from each file's access frequency and recency.
- Built a real-time dashboard over WebSockets showing the full decay, quarantine, archive and recall cycle; every action is written to a JSONL log and can be reversed in one step.
- It works on a sandboxed directory by default and never deletes a file silently; its automated tests run on GitHub Actions.

Unicorn - Autonomous Search-and-Rescue Rover | April 2026

ESP32, C++, Python, embedded systems

- Wrote firmware for a rover that raises its own Wi-Fi access point and serves the command interface from flash memory; four DC motors are driven through an L298N.
- Separated the mission logic from the Arduino runtime, so the entire control path compiles and passes unit tests on a computer with no board attached, and that suite runs in CI.
- It reports position as an uncertainty radius rather than an exact coordinate, using separate constants for calibrated and uncalibrated runs.

EDUCATION

Aksaray University - Software Engineering (BSc) | 2022 - 2026

GPA: 2.93 / 4.00

CERTIFICATES

- QNB 101 Online Program, QNB Finansbank (2024) - technical training on banking infrastructure and digital finance systems.

LANGUAGES

Turkish (native) | English (B2) | German (A1)