ALI KARPUZOGLU

Senior AI Engineer & Technical Lead

+49 177 7004487
ali@alikarpuzoglu.com
github.com/alikarpuzoglu
alikarpuzoglu.com

AI systems engineer and technical leader building agentic software, robotics, and scientific tools. Former Head of Development at Xplify. I have architected and shipped multi-agent AI platforms to production, led engineering teams, and built products used by more than 145,000 learners and educators.

TECHNICAL SKILLS

AI / ML	Agentic & multi-agent LLM systems (PydanticAI, autonomous tool use), RAG over vector stores; model serving across Anthropic, OpenAI, and self-hosted vLLM; ML foundations (PyTorch, scikit-learn, NLP, computer vision)
Backend	Python, FastAPI, Pydantic, async APIs, PostgreSQL
Frontend & Mobile	Next.js / React, React Native, native iOS (Swift) & Android, Flutter
Infrastructure	Docker, self-hosted LLM inference (vLLM), VPS deployment, GitHub Actions CI/CD
Languages	Python, TypeScript / JavaScript, Java, Swift, SQL

EXPERIENCE

09/2023 – 06/2026 **Head of Development** — **Xplify GmbH**

Built the SchulGPT MVP as a freelancer for Kolping Bildungswerk (KBW-Gruppe); the product spun off into the startup Xplify GmbH, where I joined as Head of Development and architected its successor, Kim.

- Built a course-agnostic agentic learning platform: a configurable multi-agent system whose agents autonomously call tools (retrieval, evaluation, content generation) to produce adaptive questions and interactive learning artifacts.
- Took it to production across 10 school locations and ~1,000 students; piloted the adaptive multi-agent layer with an initial cohort of ~50.
- Led the engineering team while remaining principal architect and hands-on across the stack, delivering into enterprise school environments.
- Self-hosted all infrastructure and parts of the LLM inference (vLLM on VPS) to keep student data in-region, addressing GDPR and EU AI Act requirements for education.

`Python / FastAPI / PydanticAI / Next.js / PostgreSQL`

08/2022 – 08/2023 **Senior Mobile Engineer** — **Coach AI (now Korro AI)**

- Worked on the product's core augmented-reality SDK, including the Flutter bridge exposing native AR and computer-vision capabilities to the cross-platform app.
- Built real-time motion retargeting in Unity (a rigged humanoid avatar driven from live pose data via quaternion math), powering movement tracking in the physical-therapy product.

`Flutter / Unity / Computer Vision`

2018 – 2023 **Freelance Software Developer** — **Self-employed**

- Built mobile apps for the Hopp Foundation (computer-literacy education), used by 145,000+ students and teachers across Baden-Württemberg.
- Developed a Jitsi-based remote-learning video platform during COVID for the Hopp Foundation and the Medienzentren Baden-Württemberg (the state's school media centers); contributed screen-sharing support upstream to Jitsi's React Native app.

`React Native / Swift / iOS / Android`

01/2019 – 06/2019 **Research Assistant (Android)** — **Telecooperation Group, TU Darmstadt**

- Built Android AR apps for an edge-computing research project (ARCore, Java), including a WebSocket backend for low-latency communication and an OpenGL pipeline rendering real-time AR from device transformation matrices.

`Android / ARCore / Java`

09/2016 – 02/2017 **Visiting Junior Scientist** — **Fraunhofer CESE, Maryland, USA**

- Extended Java-based testing tools; wrote Python automation that roughly doubled the speed of internal processes.

`Java / Python`

PROJECTS

2024 Present

Luna: Multi-Scale Space Simulation **luna.watermelonson.com**

• Built solo: a browser-based educational space simulator with AI features that generate complete solar systems from a prompt, on web and native iOS/Android, with real-time gravity and fluid simulation under the hood.
• ~50,000 monthly users; adopted by schools internationally.
`React / TypeScript / Three.js / Capacitor`

Moody **moody.watermelonson.com**

• A real-time collaborative whiteboard with AI features that structure thinking rather than generate it; includes live multi-user editing.
`Next.js`

Ariel: Handwriting-to-Font **font.watermelonson.com**

• Web app that turns a handwriting sample into a usable typeface.

EDUCATION

2018 2021

M.Sc. Autonomous Systems (Grade 1.5) **TU Darmstadt**

• **Master thesis:** a transformer-based NLP system for explainable AI that extracts structured objects from scene descriptions.
• Built a browser-based XR application (A-Frame) to visualize and teleoperate a robot in VR/AR, rendering its environment as a live point cloud.
`Python / PyTorch / A-Frame`

2014 2018

B.Sc. Medical Computer Science (Grade 1.3) **Hochschule Mannheim**

• **Bachelor thesis:** statistical analysis of base composition in long DNA sequences, published in *BioSystems* (Fimmel, Gumbel, Karpuzoglu & Petoukhov, 2019).

LANGUAGES

German - native
English - fluent
Turkish - proficient
Spanish, Dutch - basic

AWARDS

• Three-time recipient of the Deutschlandstipendium scholarship.
• Recipient of the Friedrich-Wingert-Stiftung scholarship for a VR first-aid simulator.

VOLUNTEERING

Open Source Development

• Fixed a memory leak in a Google Creative Lab / ml5.js project; additional contributions across various open-source projects.

Education

• Jugend hackt mentor (computer science for ages 12–18).
• CS introductory courses for the Hopp Foundation and at public events, including the Frankfurt Book Fair.
• Teaching for Heidelberger Dienste gGmbH (2018).