Abdullah Elsayed

abdullah.fathy@outlook.com
Personal Website | GitHub | LinkedIn

Software engineer building voice AI platforms, agentic coding tools, and DSLs. Experience includes real-time speech-to-speech agents, scalable backends, and modern web apps. Passionate about program synthesis, programming languages, and human-computer interaction.

EDUCATION

University of Birmingham Birmingham, UK
MEng in Computer Science and Software Engineering Sep 2019 - Jun 2023

Classification: First-Class Honors

Awards and Honors:
- University of Birmingham International Outstanding Achievement Scholarship.
- Computer Science School International Excellence Scholarship (awarded annually for 4 years).

Master's Dissertation: Thoth: A Domain-Specific Language for Multitier Web Development (78%)

Relevant Coursework: Programming Language Principles, Design & Implementation (79%) | Functional Programming (96%) | Logic and Computation (86%) | Systems Programming (96%) | Algorithms and Complexity | Machine Learning | Computer Vision | Neural Computation

Nile University Cairo, Egypt
BSc in Computer Engineering (transferred without degree) Sep 2017 - Jun 2019

GPA: 3.75

Awards and Honors:
- Full Merit Scholarship.
- Participated in 3 Undergraduate Research Forums.
- 1st Place, Nile University Undergraduate Research Forum (Controlling Epileptic Seizures with PI Controller).

WORK EXPERIENCE

Founding Engineer Jan 2024 - Present
Aim AI *United States (Remote)*

- Architected and developed a voice AI platform for creating conversational agents for customer service, sales, and automated receptionist use cases.
- Engineered real-time voice engine integrating speech-to-text, LLM, and text-to-speech pipelines with sub-second latency.
- Developed Python/FastAPI backend handling 50K+ concurrent calls daily with 99%+ uptime.
- Built a Next.js dashboard enabling configuration of conversational flows, knowledge sources, and deployments.

Full-Stack Engineer Jul 2022 - Sep 2022
Fusion XYZ *Melbourne, Australia (Remote)*

- Built HiddenGem using Next.js, an NFT analytics platform with real-time floor prices, trading volumes, and trending collections.
- Co-developed blockchain data aggregator collecting on-chain NFT data from Ethereum including sales, transfers, and marketplace events.
- Implemented interactive price charts, collection statistics, and wallet tracking dashboards with live data updates.
- Introduced coding standards and documentation practices, enhancing code maintainability.

PROJECTS

Weldr May 2024 - Present

github.com/weldr-ai/weldr

AI coding platform where agents produce codebases as semantic call graphs. Visual canvas highlights architectural components for instant comprehension while agents directly parse and query code.

- Architected dual-agent system (Planner/Coder) with stateful workflow engine managing dependencies, retries, and multi-phase execution.
- Built automated semantic analysis system enabling visual codebase inspection and agent queries for code reuse and dependency resolution.
- Engineered interactive visual canvas highlighting architectural nodes for instant system comprehension without reading source code.
- Built modular integration system for frameworks and third-party add-ons.

Thoth: Domain-Specific Language (DSL) for Multitier Web Development Sep 2022 - Mar 2023

github.com/abdllahdev/thoth | Master's Dissertation

Statically-typed DSL that unifies database, server, and client tiers into a single program, compiling to production-ready TypeScript and reducing boilerplate by up to 70%.

- Built multitier DSL in OCaml that generates production-ready web applications.
- Designed declarative syntax with type system ensuring consistency across database, server, and client tiers.
- Designed DSL to build real-time web applications using Server-Sent Events (SSE).
- Architected framework-agnostic compiler using template-based generation, enabling extensibility to alternative stacks.
- Achieved full TypeScript interoperability enabling npm ecosystem usage and custom components.

SERVICE & OUTREACH

Organizer Aug 2020

Hackathons for Schools *University of Birmingham (Remote)*

- Organized international remote hackathon initiative during COVID-19 lockdown introducing high school students (ages 15-18) to programming and software development.
- Collaborated with organizers from multiple UK universities to deliver remote programming workshops to students worldwide.
- Delivered web development workshop to 25 students with positive feedback.

Co-founder & Instructor Oct 2017 - Jun 2019

Root Programming Club *Nile University*

- Co-founded university programming club dedicated to teaching software development fundamentals.
- Taught Python programming to university students and organized multiple hands-on workshops.

SKILLS AND INTERESTS

Research Interests: Programming Languages, Program Synthesis, Human-AI Collaboration, Human-Computer Interaction

Programming Languages: OCaml, Haskell, Python, TypeScript, JavaScript, C, Java

Technologies: Node.js, React, Next.js, FastAPI, PostgreSQL, Docker, Git, Linux, Vercel AI SDK, Redis

Languages: Arabic (Native), English (Fluent)

Hobbies: Squash, Hiking