Abdullah Elsayed

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Personal Website | GitHub | LinkedIn

Software engineer focused on voice AI, AI coding tools, and domain-specific languages. Founding engineer at Aim AI and creator of Weldr (open-source AI coding platform). Interested in 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: DSL for Multitier Web Development | **Supervisor:** Dr. Vincent Rahli

Relevant Coursework: Programming Language Principles, Design & Implementation (79%) | Functional Programming (96%) | Human-Computer Interaction (80%) | Computer Vision (84%) | Intelligent Robotics (76%) | Evolutionary Computation (84%) | Machine Learning | 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.

RESEARCH & PROJECTS

Weldr May 2024 - Present

github.com/weldr-ai/weldr

Open-source AI coding platform where agents generate code and a static analysis pass builds a semantic call graph of the resulting codebase, which is visualized in an interactive canvas.

- Implemented agents that generate and modify code according to high-level tasks.
- Built a static analysis pipeline that constructs a semantic call graph from the codebase to support visualization and navigation.
- Engineered an interactive visual canvas for exploring the semantic call graph and understanding architectural relationships without reading all source files.
- Implemented a modular integration system for frameworks and third-party add-ons.

Thoth: DSL for Multitier Web Development (MEng Dissertation) Sep 2022 - Mar 2023

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

Statically-typed DSL for multitier web development written in OCaml that unifies database, server, and client tiers in a single program, compiling to type-safe human-readable TypeScript code and supporting real-time applications via Server-Sent Events (SSE).

- Designed the language (syntax and static type system) to enforce consistency across database, server, and client tiers and eliminate duplication and impedance mismatch.
- Implemented the compiler in OCaml to emit readable, idiomatic TypeScript/React/Node/Prisma code with full TypeScript interoperability (npm ecosystem and custom components).
- Supported real-time web applications by compiling high-level constructs to SSE-based streaming pipelines.
- Evaluated the DSL on multiple applications (e.g., todo list, chat, Kanban board), demonstrating substantial reductions in boilerplate compared to handwritten full-stack implementations.
- Conducted a user study (9 participants) on DSL readability; participants achieved 88%+ comprehension on unseen DSL snippets without documentation.

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

Languages: Arabic (Native), English (Fluent)

Hobbies: Squash, Hiking