Abdullah Elsayed

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Personal Website | GitHub | LinkedIn

EDUCATION

University of Birmingham Birmingham, UK
MEng in Computer Science and Software Engineering Sep 2019 – June 2023

Classification: First-Class Honors

Awards and Honors:

- University of Birmingham International Outstanding Achievement Scholarship.
- Computer Science School International Excellence Scholarship.

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 – June 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 Next.js dashboard with no-code agent builder for configuring conversational flows, knowledge bases, and deployments.

PROJECTS

Weldr May 2024 - Present
github.com/weldr-ai/weldr

Chat-native AI coding platform where agents generate working codebases and model repositories as semantic call graphs, with visual canvas highlighting key architectural components for instant comprehension.

- Architected dual-agent system (Planner/Coder) with stateful workflow engine managing task dependencies, retries, and multi-phase execution.
- Built semantic code understanding system extracting declarations into incrementally-maintained call graph enriched with AI embeddings.
- Engineered interactive visual canvas surfacing high-level architectural nodes for instant system comprehension without reading source.
- Built modular integration system for frameworks and 3rd 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 compiler in OCaml generating human-readable, production-ready TypeScript for React frontend, Express backend, and Prisma schemas.
- Designed declarative syntax with unified type system ensuring automatic consistency across database, API, and UI tiers.
- Enabled generated applications to automatically support real-time synchronization via Server-Sent Events with live updates across all clients.
- Implemented automatic CRUD generation with fine-grained authorization and integrated authentication with session management.
- Architected framework-agnostic compiler design using template-based code generation, enabling extensibility to alternative tech stacks.
- Achieved full TypeScript interoperability allowing developers to leverage the npm ecosystem and write custom components.

SERVICE & OUTREACH

Organizer 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 2018 - 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: Program Synthesis | Neurosymbolic AI | Programming Language Design | 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