

Abdullah Elsayed

Personal Website | GitHub | LinkedIn

Software engineer with experience in production AI systems, compiler implementation, and developer tools, alongside academic projects in machine learning and robotics.

EDUCATION

MEng in Computer Science and Software Engineering

Sep 2019 - Jun 2023

University of Birmingham, Birmingham, UK — **First-Class Honours** | GPA: 4.25 (overall weighted mark: 75)

Master's Dissertation: Thoth: DSL for Multitier Web Development (78%) | **Supervisor:** Dr. Vincent Rahli

Selected Modules: Functional Programming (96) | Computer Vision and Imaging (84) | Evolutionary Computation (84) | Human-Computer Interaction (Extended) (80) | Programming Language Principles, Design, and Implementation (Extended) (79) | Intelligent Robotics (76) | Machine Learning and Intelligent Data Analysis (71) | Neural Computation (68)

Awards

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

INDUSTRY EXPERIENCE

Founding Engineer, Aim AI

Jan 2024 - Apr 2026

United States (Remote)

- Helped scale Aim AI's realtime voice-agents platform from pre-revenue to about \$8M ARR and 1M daily phone calls by building the dashboard and production voice-agent runtime.
- Designed and implemented the Python/FastAPI runtime for live SIP/WebSocket calls, with streaming STT, LLM, and TTS integration, interruption handling, and call transfers.
- Led development of Aim's Next.js dashboard, where customers configured agents, launched campaigns, reviewed calls, and monitored performance.
- Developed an automated evaluation system for campaign quality using configurable judges, annotated datasets, and sampled production calls.

Full-Stack Engineer, Fusion XYZ

Jul 2022 - Sep 2022

Melbourne, Australia (Remote)

- Built HiddenGem's Next.js NFT analytics dashboard for real-time floor prices, trading volume, trending collections, and wallet insights.
- Helped build HiddenGem's backend for tracking NFT sales, transfers, and marketplace activity on Ethereum.
- Defined coding standards and wrote project documentation for a remote early-stage team.

SELECTED PROJECTS

Weldr [weldr-ai/weldr-old](#)

May 2024 - Jan 2026

AI coding workspace for building full-stack apps through chat, with an interactive architecture canvas and a queryable code graph for agents. Supports branching and version history. Part of UoB Elevate, the University of Birmingham's startup incubator.

- Designed a branch-and-version system with isolated branch state and immutable snapshots for project forks, version history, and restoration.
- Built an incremental TypeScript/JavaScript code analyzer that extracts declarations and dependencies into a queryable semantic graph for each snapshot.
- Built agent tools that search and query the graph, and a React Flow canvas that displays pages, endpoints, and models from each snapshot.

Thoth: Multitier Web DSL & Compiler [abdufelsayed/thoth](#)

Sep 2022 - Mar 2023

A multitier DSL built with OCaml for writing full-stack web applications in one language, compiling to React, Node.js, and Prisma. MEng dissertation.

- Designed a multitier DSL for database models, typed server queries, client interfaces, authentication, and permissions.
- Implemented parsing, cross-tier checks, and tier-specific IRs in the OCaml compiler, which generates React, Node, and Prisma projects editable independently of the DSL.
- Compared three applications with reference implementations. Todo and Chatroom required about 15% of the reference Node/React source lines.
- Conducted a comprehension study with 9 participants, five of whom correctly explained every snippet.

Coverage Planning Comparison [abdufelsayed/ros-coverage-planning-comparison](#)

Dec 2021

Group coursework comparing zigzag, reactive spiral, and depth-first backtracking coverage in ROS Stage.

- Started the ROS planning package and helped implement odometry-based motion control and laser obstacle detection.
- Co-authored a comparison across four maps. Backtracking averaged 65.9% coverage; spiral covered the most area per unit of reported travel distance.

U-Net for Cardiac MRI Segmentation [abdufelsayed/unet-cardiac-segmentation](#)

Nov 2021

Neural Computation coursework on four-class cardiac MRI semantic segmentation using the ACDC dataset.

- Implemented and tuned a four-level U-Net in PyTorch, using batch normalisation, transposed convolutions, and skip connections.
- Compared U-Net and an FCN-8 variant. Validation foreground Dice was 0.87-0.90 and 0.44-0.50, respectively; the submitted U-Net scored 0.888 on the private leaderboard.

Monte Carlo Localisation [abdufelsayed/ros-particle-filter-localisation](#)

Oct 2021

Group coursework using a ROS particle filter to locate a robot within a known map.

- Helped implement systematic resampling, random-particle injection for recovery, and pose estimation from the largest K-means cluster.
- Co-authored a qualitative comparison with AMCL on recovery from poor initial poses and stability as the robot moved.

SERVICE & OUTREACH

Co-organizer, Hackathons for Schools

Aug 2020

University of Birmingham (Remote)

- Co-organized a remote hackathon during COVID-19 that introduced high school students (ages 15-18) to programming and software development.
- Collaborated with organizers from multiple UK universities and taught a web development workshop to about 20 students.

TECHNICAL SKILLS

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

AI / Robotics: PyTorch, NumPy, Pandas, Matplotlib, ROS

Web: React, Next.js, Node.js, FastAPI, PostgreSQL, REST APIs, WebSockets

Infrastructure: GCP, AWS, Docker, Linux, CI/CD

Spoken: Arabic (Native), English (Fluent)