

Abdullah Elsayed

Personal Website | [GitHub](#) | [LinkedIn](#)

Software engineer and First-Class MEng graduate 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).

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

Intelligent Robotics group coursework comparing coverage-planning techniques in the ROS Stage simulator.

- Initiated the ROS planning package and contributed closed-loop motion and laser-based obstacle detection for spiral, zigzag, and backtracking planners.
- Co-authored the four-map comparison: backtracking averaged 65.9% coverage, while spiral led in coverage per reported distance.

U-Net for Cardiac MRI Segmentation [abdufelsayed/unet-cardiac-segmentation](#) Nov 2021
Neural Computation coursework on four-class cardiac MRI segmentation using the ACDC dataset.

- Implemented and tuned a four-level PyTorch U-Net with batch-normalised convolution blocks, transposed upsampling, and skip connections.
- Compared U-Net with FCN-8: 0.87-0.90 versus 0.44-0.50 validation Dice; the selected U-Net scored 0.888 on the private leaderboard.

Monte Carlo Localisation [abdufelsayed/ros-particle-filter-localisation](#) Oct 2021
Intelligent Robotics group coursework on particle-filter localisation in ROS, evaluated against AMCL.

- Implemented a ROS particle-filter localiser with CDF resampling, injected random hypotheses, and nearest-neighbour pose estimation.
- Contributed to the team's later system with systematic resampling, adaptive recovery, and K-means pose estimation; co-authored the qualitative AMCL comparison.

INDUSTRY EXPERIENCE

Founding Engineer, Aim AI Jan 2024 - Apr 2026
United States (Remote)

- Helped scale Aim's voice-agent platform from pre-revenue to about \$8M ARR and 1M daily 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.
- Contributed to HiddenGem's Ethereum event-ingestion pipeline for NFT sales, transfers, and marketplace activity.
- Defined coding standards and wrote project documentation for a remote early-stage team.

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)