

MATTHAIOS MARKATIS

AI Engineer

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PROFILE

AI Engineer with a **BSc in Physics** from the University of Sheffield, specializing in agentic AI systems and full-stack development. Sole AI engineer at **Synergy Cloud**, where I led the automation of nearly the entire insurance claims process by designing and deploying conversational agents, automated workflows, and trigger-based task execution. Experienced across the full agentic stack: tool creation, RAG pipelines, database indexing, tracing, deployment, and optimization. Additional professional experience in **RLHF training** and LLM annotation. IBM certified in AI Engineering and Data Science.

WORK EXPERIENCE

AI Engineer July 2025 - Present

Synergy Cloud - SaaS Insurance Platform

Designed and shipped the platform's complete agent architecture using **OpenAI Agents SDK** and **Azure OpenAI**, building 19+ custom tools for claims data retrieval, document processing, and automated actions. Engineered action tools that enable agents to autonomously send customer communications and update financial fields, and built a trigger-based tasking platform for automated agent execution on system events, effectively automating end-to-end claims workflows. Implemented **RAG pipelines** with Azure AI Search for knowledge base ingestion, giving agents real-time access to policy documents, claim histories, and procedural guides. Designed and built the full chat interface including per-user context, persistent conversation memory, file upload support, and **human-in-the-loop approval flows** for authorising agent actions before execution. Also developed an evaluation platform for benchmarking agent accuracy and an auto-improver that iteratively refines system prompts using scored run data.

AI Data Annotator & Reasoning Specialist June 2024 - Present

Outlier AI

Design and create synthetic training data for LLMs using **RLHF**, specializing in graduate-level mathematics and logical reasoning. Contribute to fine-tuning pipelines for state-of-the-art reasoning models, focusing on multi-hop inference chains and systematic error identification.

Team Leader Feb 2022 - Nov 2023

Meltdown-Wetherspoons

Managed daily operations and trained staff across high-volume venues. Optimized service workflows, improving operational efficiency by 15% and consistently achieving 90%+ scores in company quality assessments.

PROJECTS

Enterprise Email Analytics Platform 2025

AI/ML Data Pipeline

Streaming pipeline that processes thousands of customer emails through **Azure OpenAI**, extracting 47 structured fields including sentiment, pain points, and automation potential. Uses **HDBSCAN clustering** with GPT-generated labels to surface recurring issue patterns. Includes a full analytics dashboard with interactive visualizations and a RAG-powered chat agent for natural language querying across clustered data.

Autonomous Bug Fixing Agent 2025

Azure DevOps Automation

Autonomous agent built with **OpenAI Codex SDK** and integrated into **Azure DevOps**. Continuously monitors work items, analyzes bug reports with image context, generates code fixes across Git and TFVC repositories, runs linting, and auto-creates pull requests and changesets. Handles concurrent jobs with isolated workspaces and automatic artifact linking back to work items.

Wildfire Detection System 2024

University of Sheffield Research

IoT fire detection system using **Raspberry Pi**, LoRaWAN, and ML models (Random Forest, Decision Trees) trained on NASA FIRMS satellite data. Achieved **86% prediction accuracy** with 10-minute early warning capability at a hardware cost of GBP 46 per unit. Includes a web dashboard built with Flask and Leaflet.js for real-time monitoring.

AI Image Generation App 2024

Flutter Mobile Application

Production mobile app built in Flutter with a custom **FLUX.1 diffusion model** fine-tuning pipeline via Replicate API. Full-stack implementation including OAuth authentication, Firebase backend, and Google Play billing integration. **Published to Google Play Store** with active users.

TECHNICAL SKILLS

AI & Machine Learning <ul style="list-style-type: none">- TensorFlow, PyTorch, Keras- CNN, RNN, Transformers- LLM fine-tuning, RAG systems- Computer Vision, NLP	Agentic AI <ul style="list-style-type: none">- OpenAI Agents SDK- Azure OpenAI, AI Search- LangChain, ChromaDB, Mem0- Prompt Engineering, MCP, n8n	Development <ul style="list-style-type: none">- Python, TypeScript, C/C++- React, Node.js, Flask, Next.js- Flutter, Dart (Mobile)- REST APIs, CI/CD, Docker
Data Engineering <ul style="list-style-type: none">- SQL, PostgreSQL, MongoDB- ETL pipelines, Firebase- Statistical analysis, A/B testing- Pandas, NumPy, Scikit-learn	Cloud & DevOps <ul style="list-style-type: none">- Azure (full platform)- AWS, Google Cloud- Docker, Kubernetes- GitHub Actions, Jenkins	Hardware & IoT <ul style="list-style-type: none">- Raspberry Pi, Arduino- LoRaWAN, Sensor integration- FPGA, VHDL, LabVIEW- 3D Printing, PCB assembly

EDUCATION & CERTIFICATIONS

BSc Physics 2020 - 2024 2:1 (Upper Second-Class Honours)

University of Sheffield

Programming & Technical

Advanced Programming in Python (82%)

Programming in Python (78%)

Physical Computing (70%)

Physics with LabVIEW (70%)

Physics Core

Physics of Materials (75%)

Atomic and Laser Physics (69%)

Particle Physics (67%)

Physics Research Project (59%)

IBM AI Engineering Professional Certificate Aug 2024

Coursera

Comprehensive ML, deep learning, and AI engineering program. Covers reinforcement learning, hyperparameter tuning, model selection, and deployment via **AWS SageMaker**. Deployed a traffic light identification system achieving **98% accuracy**.

IBM Data Science Professional Certificate Jul 2024

Coursera

End-to-end data science workflow from collection to insights. Covers data analysis, scraping, and **ETL pipelines** using AWS, Azure, and GitHub Actions. Built a SpaceX Falcon landing prediction classifier achieving **80% accuracy**.