

Shah Fahad Hossain

AI & Software Engineer — Agentic AI, LLM Systems & Production Backends

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[LinkedIn](#) | [GitHub](#) | [Portfolio](#) | [Google Scholar](#)



Profile

AI & Software Engineer with a Master's in Artificial Intelligence, building and shipping AI-powered software end to end from LLM-based agentic systems and RAG pipelines to the Python backends, APIs, testing and CI/CD that put them into production. At ASML, I developed and shipped the Root Cause Advisor, an agentic AI system that automates root-cause analysis of failing test executions, together with the evaluation tooling that proves it works. Previously I fine-tuned a multi-modal LLM for an industrial partner, built a healthcare generative-AI chatbot backend, and delivered Django REST Framework systems used by real clinical researchers. Peer-reviewed publications and four organisations of hands-on delivery across industry, healthcare and research.

Work Experience

ASML — EngD Candidate

11/2025 – Present

- Shipped the Root Cause Advisor: an agentic AI system that orchestrates LLM reasoning (OpenAI GPT-5, Mistral via Azure OpenAI) over production log data to automatically determine the root cause of failed test executions.
- Evaluated Knowledge Graphs, and Retrieval-Augmented Generation before committing to a production design; built the RAG pipeline with embedding-based retrieval over a vector database (ChromaDB).
- Built dedicated evaluation and monitoring tooling so accuracy, cost and latency stay measurable, now reused by the wider engineering team.
- Work in a production Python codebase with Git, Docker, automated testing and CI/CD (Bitbucket), and use AI coding tools daily while holding AI-assisted code to the same standard as any other production code.
- Tech Stack: Python, LLMs, Agentic AI, RAG, Knowledge Graph, GraphRAG, Prompt Engineering, Vector DB (ChromaDB), Azure OpenAI, Databricks, Docker, CI/CD, Git, Bitbucket*

Eindhoven University of Technology — EngD Candidate in Software Technology

11/2024 – 10/2026

- Fine-tuned a multi-modal LLM to detect handwritten digits on eggshell images for an industrial partner (Hendrix Genetics BV), taking it from prototype to a deployed tool now in active use by the client's team.
- Designed and evaluated AI models for generating narratives on the AutoFlow tool used by the TU/e Security Group.
- Rotated through Team Lead, Test Engineer and Project Manager roles across 3 in-house software projects, including release planning and quality assurance.
- Tech Stack: Python, LLM Fine-Tuning, Multi-Modal Models, Deep Learning, Streamlit, Docker, CI/CD*

IBENS, PSL University, Paris — Full-Stack Developer

03/2024 – 08/2024

- Designed a machine-learning model for time-series EEG-based coma prediction and built the Django REST Framework API and web application that shipped it for real clinical researchers.
- Tech Stack: Python, Machine Learning, Django, Django REST Framework, SQLite, Docker, CI/CD*

Eurosiamart (Cogniroot) — AI & Software Engineer

05/2023 – 07/2023

- Built the Django REST Framework backend and AI features for a healthcare generative-AI chatbot, integrating an external LLM service and applying NLP techniques.
- Tech Stack: Python, Django, NLP, LLM Integration, REST APIs*

ICDDR,B, Bangladesh — Backend Developer & Project Manager

07/2020 – 01/2021

- Built the backend and mobile integrations of a cross-platform Flutter application (Online Doctor Chamber) enabling real-time video-call consultations between patients and doctors.
- Tech Stack: Flutter, Dart, Backend Integration*

Education

Engineering Doctorate in Software Technology — Eindhoven University of Technology

2024 – Present

Master of Science in Artificial Intelligence — Université Paris-Saclay, France

2022 – 2024

Bachelor of Science in Software Engineering — Daffodil International University, Bangladesh

2017 – 2021

Projects

Student Performance Prediction System — ML & Django Developer

2021

- Integrated a research-grade ANN model (92% accuracy) into a Django web application with REST APIs and a relational data model.
- *Tech Stack: Python, Django, REST APIs, TensorFlow/Keras, Scikit-learn, Pandas, NumPy, SQL, Git*

Birth Register System — Full-Stack Developer

2020

- Built a multi-role Django web application with role-based access control and admin review workflows on a relational (SQLite) data model.
- *Tech Stack: Python, Django, SQLite, Bootstrap, JavaScript*

Technical Skills

Python, Java, C | LLMs, Agentic AI, RAG, Knowledge Graphs, GraphRAG, Prompt Engineering, LLM Fine-Tuning, Multi-Modal Models, Machine & Deep Learning (PyTorch, TensorFlow), NLP, Computer Vision | Django, REST APIs, Streamlit | SQL, SQLite, MongoDB, Vector Databases (ChromaDB) | Git, Docker, CI/CD, Automated Testing, Azure OpenAI, Databricks, Agile

Publications

Research Papers — Journal: 1, Conference: 2, Online Course: 1. Full list on Google Scholar (linked above).

Honors and Awards

Campus France Scholarship

09/2023

Award Institute: French Embassy, Bangladesh

World Runner-up, International Flutter Hackathon

06/2020

Award Institute: Google LLC

Languages

English: Fluent | Dutch: Basic

Reference

Paul Van Gorp — Group Leader, ASML — pcnvangorp@gmail.com

Dr. Yanja Dajsuren — Assistant Professor, Program Director of EngD-Software Technology, TU Eindhoven — y.dajsuren@tue.nl