Taiabur Rahman

Freelance Machine Learning Engineer · Computer Vision · Medical Imaging · LLM & AI Agents · MLOps

Available immediately · freelance through my own French SAS · Paris / Île-de-France, on site or remote

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PROFILE

Machine learning engineer with **6+ years of software development** and a research background in **medical image analysis**. I build deep learning models for images (segmentation, classification, registration), **LLM-based agents and fine-tuning pipelines**, and the production code around them: data pipelines, APIs, tests, CI/CD, Docker and cloud deployment. I am used to turning research code into reliable tools, working with clinicians and non-technical users, and delivering in small international teams.

Typical missions: computer vision or medical imaging model development · LLM / RAG / AI agent applications · fine-tuning and evaluation of vision and language models · moving ML proofs of concept into production · data pipelines and APIs for AI products · technical audits and benchmarks of models.

6+ yrs	2	400+	100K+	50+
software development	research papers (ICPR 2026 + 1 in review)	3D image volumes processed	samples for model fine-tuning	daily users of my hospital software

AREAS OF EXPERTISE

Computer vision & medical imaging

- 2D/3D segmentation (nnU-Net, 3D U-Net), image classification, registration
- MRI, CT, high-resolution 3D microscopy, dermoscopy, ophthalmic data (visual fields)
- DICOM handling, large public imaging datasets (NCI Imaging Data Commons)
- Evaluation with Dice, Hausdorff distance, balanced accuracy, AUC

LLMs & AI agents

- LLM-based agents and reusable agent skills; tool use and MCP servers
- Fine-tuning: OpenAI, Gemini (vision), open models with LoRA (Unsloth); cost/quality comparison
- RAG pipelines, natural-language-to-SQL with safety checks
- LangGraph, LangChain, OpenAI and Gemini APIs

Machine learning & data

- Clinical prediction models with uncertainty (attention-based, longitudinal data)
- Cohort building, data cleaning and harmonisation, reproducible evaluation
- Python data stack: pandas, NumPy, scikit-learn, SQL, DuckDB

Software engineering & MLOps

- Backend and REST APIs (Laravel/PHP, FastAPI), SQL databases
- Docker, Git, CI/CD, automated tests (pytest), documentation
- Cloud deployment on AWS; GPU clusters with SLURM; Linux
- Small tools and demos with Streamlit

SKILLS MATRIX

Area	Tools & methods	Where I used them	Period
Languages	Python, SQL, PHP, Bash, JavaScript	Blackbird.AI, INSERM, MAIA, Vision Eye Hospital	2017 – 2026

Deep learning	PyTorch, TensorFlow / Keras, nnU-Net, MONAI, 3D U-Net, VGG16, ResNet50	INSERM thesis, MAIA projects, GLAM	2022 – 2026
Medical imaging	SimpleITK, ITK, Elastix, nibabel, pydicom, 3D Slicer	INSERM, MAIA (MRI, CT), IDC Explorer	2022 – 2026
Computer vision	OpenCV, scikit-image, Albumentations, data augmentation	MAIA projects, INSERM	2022 – 2024
LLMs & agents	OpenAI API, Gemini (vision), LoRA with Unsloth, LangGraph, LangChain, RAG, MCP	Blackbird.AI, IDC Explorer	2025 – 2026
Machine learning	scikit-learn, pandas, NumPy, statistical evaluation, uncertainty estimation	GLAM study, MAIA	2022 – 2026
Data	SQL databases, DuckDB, data pipelines, cohort curation	Hospital system, Blackbird.AI, IDC Explorer, GLAM	2017 – 2026
Backend & web	Laravel, REST APIs, FastAPI, Streamlit	Vision Eye Hospital, IDC Explorer	2017 – 2026
MLOps & cloud	Docker, Git, CI/CD, pytest, AWS, Linux, SLURM / HPC	Blackbird.AI, INSERM, IDC Explorer	2024 – 2026
Methods	Reproducible evaluation, benchmarking, code review, technical documentation, working with clinicians	All missions	2017 – 2026

PROFESSIONAL EXPERIENCE & MISSIONS

Machine Learning Engineer

Sep 2025 – Jun 2026

Blackbird.AI — New York, USA (remote) · SaaS for narrative and risk intelligence · international team

Context: AI products that ingest, classify and monitor large volumes of online content.

- Built **LLM-based AI agents** (multi-agent system for data ingestion, classification and monitoring) and **reusable agent skills** shared across the team.
- Fine-tuned **OpenAI and Gemini (vision)** models, and open models with **LoRA via Unsloth**, on datasets of **100K+ samples**; compared quality and cost to choose the cheapest option that met the target.
- Built data pipelines and MLOps: services in **Docker**, integration through APIs, **CI/CD** and deployment on **AWS**.

Python · OpenAI · Gemini · Unsloth / LoRA · LangGraph · Docker · CI/CD · AWS

Graduate Research Intern — Deep Learning for 3D Image Segmentation

Feb – Aug 2024

INSERM UMR 1231, NEUROGEMM — Dijon, France · master's thesis

Context: manual segmentation of mouse brain microscopy volumes took about a week per brain.

- Built an automated **nnU-Net** pipeline segmenting **26 brain regions** in high-resolution 3D microscopy (HREM).
- Mean **Dice above 0.90 in 18 of 26 regions**; time cut from about a week to **under 5 minutes** per brain.
- Prepared and quality-controlled **400+ large volumes**; trained on a GPU cluster (SLURM) with 5× downsampling to fit memory and time.
- Results used for volume and shape statistics comparing mutant and wild-type mice; **published at ICPR 2026**.

PyTorch · nnU-Net · SimpleITK · SLURM · Linux

Full-Stack Developer
Dec 2017 – Aug 2022

Vision Eye Hospital (ophthalmology) — Dhaka, Bangladesh

Context: the hospital needed one system for its clinical and administrative workflows.

- Designed, built and maintained the hospital management platform: backend in **Laravel / PHP**, **REST APIs** and **SQL database**.
- Modules for patients, appointments, doctors, investigations, operating theatre, invoices and reports.
- Used daily by **50+ clinical and administrative staff**; handled requirements with doctors, releases, data quality and production support.

Laravel · PHP · REST APIs · SQL · JavaScript · Linux

PROJECTS

IDC Explorer — AI agent tools for a public cancer imaging database
2026 · open source

github.com/taiaburbd/IDC-Explorer

- Ask questions in plain language about the **NCI Imaging Data Commons** (86,451 patients, CT/MRI and AI segmentations); every answer shows its SQL, viewer links and code to reproduce it.
- Prepared questions, SQL playground, filters and chat history; **MCP server** so AI agents can query the data; **read-only safety checks** on generated SQL.
- Built with Claude Code from a written specification; automated tests with pytest.

Python · DuckDB · SQL · MCP · Streamlit · pytest

GLAM — deep learning for glaucoma progression (first author)
2025 – 2026

- Built a clinical cohort of **4,276 eyes**; attention-based model combining series of visual-field tests over time with clinical features, with **uncertainty estimates**.
- Identifies fast-progressing patients with **AUC 0.990**; manuscript in peer review at *Scientific Reports*.

PyTorch · pandas · scikit-learn

Master's projects (MAIA)
2022 – 2024

- **3D brain MRI tissue segmentation** (WM / GM / CSF) with a custom 3D U-Net in PyTorch and TensorFlow; >90% Dice on the test set.
- **Lung CT registration** (COPDGene): rigid, affine and deformable registration with Elastix and SimpleITK, evaluated with landmark error.
- **Skin lesion classification** (ISIC dermoscopy): transfer learning with VGG16 and ResNet50 and strong augmentation; ~88% balanced accuracy.

PUBLICATIONS

- B. Zayim, E. Skutunova, **T. Rahman** (equal contribution), et al. *Automatic Segmentation for 3D Morphometric Analysis of the Mouse Brain.* ICPR 2026, LNCS vol. 16816, pp. 709–723, Springer. doi.org/10.1007/978-3-032-31666-0_46
- **T. Rahman** (first author), S. Rahman, M. Moniruzzaman, et al. *Deep learning of longitudinal visual fields predicts glaucoma progression rate and identifies fast progressors.* arXiv:2609.29256, 2026 · in peer review at *Scientific Reports*.

EDUCATION & TRAINING

2022 – 2024	**Erasmus Mundus Joint Master in Medical Imaging and Applications (MAIA)**, 120 ECTS — Université de Bourgogne (France), Università di Cassino (Italy), Universitat de Girona (Spain). French diploma: Master 2, Traitement du Signal et des Images, parcours Computer Vision. Global mark 7.41 / 10.

2014	**BSc in Computer Science and Engineering** — Bangladesh University, Dhaka.
2023	17th EXCITE Summer School on Biomedical Imaging — ETH Zurich, University of Zurich and Paul Scherrer Institute (hands-on SPECT/CT).
2023 – 2024	Winter School, Università di Cassino · Hackathons: HackUPC 2024, Datathon IA4Care, bitsxlaMarató.

PRACTICAL INFORMATION

Working terms

- Freelance through my own French SAS (invoicing B2B)
- Available immediately, full time or part time
- On site in Paris / Île-de-France or remote; open to short travel
- Time-and-materials (régie) or fixed-scope (forfait) missions

Languages & references

- English: fluent, working language · French: intermediate (A2–B1) · Bengali: native
- Prof. Fabrice Meriaudeau, Université Bourgogne Europe — fabrice.Meriaudeau@u-bourgogne.fr
- Prof. Arnau Oliver, Universitat de Girona — arnau.oliver@udg.edu