Muhammad Hasheem Iftikhar

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Education

FAST-NUCES (National University of Computer and Emerging Sciences) Karachi, Pakistan
BS in Computer Science, CGPA 3.20/4.0 Degree • Transcript Aug 2022 - Jun 2026

- **4.0/4.0 in AI and quantitative coursework:** Artificial Intelligence (A+), Generative AI (A), Deep Learning for Perception (A), Recommender Systems (A), Probability and Statistics (A); Final Year Project I and II (A+, A+).
- **3x Dean's List Honor Student** (three consecutive terms). 1 • 2 • 3
- Thesis: *Enhancing mAIstro: Improving the Performance of Small Language Models in Multi-Agent Medical Workflows*. Supervisor: Ms. Alina Arshad. See here

The Lyceum School Karachi, Pakistan
Cambridge International Education (CAIE), GCE A Levels Certificate • English General 2019 - 2021

- **A* in Computer Science** (the highest-grade Cambridge awards); A in Physics, Mathematics and English General.

Head Start School System Karachi, Pakistan
Cambridge International Education (CAIE), GCE O Levels Certificate 2017 - 2019

- **High Achiever: 6 A*s, 2 As.** 1 • 2

Publications and Manuscripts

Under review

1. M. U. Saleem, W. Naveed, **M. H. Iftikhar**, M. A. Ijaz, H. Munir, "When AI Work Becomes Official: Locating Authority in AI-Assisted Coursework," submitted to **ACM FAccT 2027** (ACM Conference on Fairness, Accountability, and Transparency), *under review*. See here

In preparation

2. **M. H. Iftikhar**, A. Soban, I. Muhammad, with the original mAIstro authors E. Tzanis and M. E. Klontzas, "Enhancing mAIstro: Making Small Language Models Reliable in Multi-Agent Medical AI Workflows," joint submission planned for **MICCAI 2027**. Thesis version
3. "GovMem / CourseCorrect: Dependency-Aware Memory for AI Course Assistants" (working title), with M. U. Saleem and Dr. A. Ali, *manuscript in preparation*.

Research Experience

Enhancing mAIstro: Multi-Agent Medical AI Karachi, Pakistan
Final-year thesis See here Aug 2025 - Present
Now an international collaboration with the original mAIstro authors

- Found that mAIstro's 100% task success with frontier LLMs drops to **10-18% on small local models**, the only privacy-safe option for hospitals that cannot send patient data to external APIs.
- Designed a **Master Router Agent** over 13+ sub-agents and an optimization pipeline: context pruning, enforced chain-of-thought, schema-constrained decoding and **Agentic RAG** over a 10,000+ line tool library.
- Reached **91% task success** across four open small models (**+81 points** on Mistral 7B, **+73** on Llama 3.1 8B), running fully offline on consumer CPUs.
- The original authors, Dr. Michail E. Klontzas and Dr. Eleftherios Tzanis, held planning meetings with our team and are **independently evaluating our system** ahead of a joint **MICCAI 2027** submission.

TRACE: Authority in AI-Assisted Coursework (ACM FAccT 2027 submission) Remote
Percevio Labs See here Mar 2026 - Oct 2026
With co-authors from Amazon, Duke University, Northwestern Polytechnical University and Harbin Institute of Technology

- **Built TRACE**, the course-grounded prototype at the center of the paper, now publicly deployed as Fazah. **Co-wrote the manuscript** and co-developed its **Coursework Authorization Model**.

- **Designed the interview protocol and led student-side data collection** for a mixed-methods study of **67 instructors and 94 students across Saudi Arabia, the US and Pakistan**, using bilingual instruments.
- Key finding: instructors delegate work to AI but not authority over it; 43 of 67 required the ability to review and edit AI outputs.

GovMem: Dependency-Aware Memory for AI Course Assistants Remote
Ongoing research project Sep 2026 - Present
With Muhammad Usama Saleem (PhD, UNC Charlotte) and Dr. Ayman Ali (Riyadh College of Technology for Information and Telecommunications)

- Addresses a gap: when an instructor corrects course content, current AI tools do not carry the fix to the quizzes, grades and feedback that depend on it.
- GovMem traces which artifacts depend on each edit, updates only those, and sends uncertain changes to the instructor for approval.
- Building **CourseCorrect**, a benchmark of semester-long course-edit episodes for evaluating GovMem.

Percevio Labs Remote
Associate AI Researcher Jan 2026 - Present
Undergraduate in a team of Master's and PhD researchers

- **Saudi legal-domain LLM:** reviewed published research to choose the fine-tuning method (LoRA, QLoRA, full fine-tuning) and the evaluation metrics.
- Led research and code review of the data-generation and fine-tuning pipelines, analyzing performance against cost for budget-constrained deployment.

The Bridge of Hopes Karachi, Pakistan
AI Research Engineer (AI team**) to AI Research Team Lead** Mar 2024 - Sep 2025
Research initiative led by Dr. Anam Qureshi building AI assistive technology for children with ADHD and special needs

- **Founding AI researcher**, selected through a competitive application; joined **before the project had any funding**. The groundwork we laid helped the initiative **secure funding later**.
- Set the research direction by studying where ADHD traits meet AI capabilities, so the system could identify how each child learns and tutor them accordingly.
- Built a new **6,220-image, 39-class Urdu alphabet dataset** with no public equivalent.
- **Appointed AI team lead by Dr. Qureshi (**Selection**)** on my seniors' recommendation; directed a CNN classifier reaching **95.52% accuracy (F1 = 0.96)**.

Teaching and Mentoring

Code in Place, Stanford University Remote (Global)
Section Leader Acceptance • Section Leader Oct 2026 - Present

- Selected from **1,000+ applicants worldwide**, with selection including a simulated teaching session.
- Lead weekly live sections for international learners, including working professionals; teach programming fundamentals with real-time debugging and code review.
- Shadow other section leaders' sessions and give constructive feedback, improving teaching on both sides.

FAST-NUCES Developer Student Club Karachi, Pakistan
Data Science and ML Co-Lead See here Oct 2024 - Jun 2025

- Invited national and international researchers and practitioners as speakers; built beginner-friendly DS/ML learning roadmaps.
- Ran **5-6 remote and hybrid events with 400+ total attendees**, focused on hands-on skills and live demos.
- Led a student team across content, logistics, communications and event-day operations.

Government School Outreach Karachi, Pakistan
Volunteer Teacher See here 2017 - 2018

- Taught **Mathematics and Science** to underprivileged primary and secondary students, strengthening their core concepts; led fundraising drives for their education.
- Received the **Certificate of Citizenship for Community Service**.

Industry and Applied Experience

VeriPark Remote, HQ London, UK
Software Engineering Intern See here Jun 2026 - Aug 2026
Banking software provider for financial institutions in the UK, Turkey and the UAE

- Built an enterprise expense-management application (Angular, ASP.NET Core, SQL Server) with role-based, multi-stage approval workflows.

Zaytune Remote, Michigan, USA
AI Engineer (Contract, Part-time) Oct 2025 - Mar 2026

- Sole engineer; built the core LLM backend with **multi-model orchestration and routing between fast and reasoning modes**, **RAG over uploaded documents**, **source-linked web search**, and **vision-language model integration**.

Atomic Computing Remote, Philadelphia, PA, USA
Associate Cloud Engineer (Part-time) Sep 2025 - Jan 2026
AWS Advanced Tier Partner

- Designed a cloud cost-analytics pipeline (AWS CUR, S3, Glue, Metabase) that **cut analytics running costs by 70-90%**.
- Earned **AWS Solutions Architect, Associate** and **Cloud Practitioner** within three months through a company-sponsored certification track, alongside final-year studies.

US construction firm Remote, USA
AI Engineer (Contract) Aug 2025 - Nov 2025

- Built an object-detection pipeline estimating cost and labour from architectural drawings; raised accuracy **from 63% to 90%** through data-efficient augmentation with limited labeled data.

International Hackathons and Competitions

AgentX Hackathon, Astera Software (USA): Top 5, *autonomous HR agent in 4 hours* See here — Feb 2026
NASA International Space Apps Challenge 2025 (Advanced Track), *A World Away*, exoplanet classification See here — Oct 2025
IBM watsonx Generative AI Hackathon (lablab.ai), *SmartStudy*, IBM Granite study assistant See here — Aug 2024
Co-Creating with GPT-5 Hackathon (lablab.ai), *ActionPlanner AI*, 3-agent LangGraph system See here — Aug 2025
AI for Connectivity Hackathon (lablab.ai), *School Network Performance Analyzer*, Llama 3.3 RAG See here — Jan 2025
BAND of Agents Hackathon (lablab.ai), *StudioDesk*, 3-agent video repurposing pipeline See here — Jun 2026
CALICO Fall '24, UC Berkeley, international programming contest See here — Fall 2024

Certifications

- **AWS Certified Solutions Architect, Associate** See here • **AWS Certified Cloud Practitioner** See here
- **Google Data Analytics** (Coursera) 1 • 2 • 3 • 4

Technical Skills and Languages

- **ML and Research:** PyTorch, TensorFlow/Keras, scikit-learn, OpenCV, FAISS, LoRA/QLoRA fine-tuning, constrained decoding, RAG, vision-language models, multi-agent orchestration (LangChain/LangGraph), evaluation design, dataset curation, mixed-methods study design
- **Engineering:** Python, C#, TypeScript, SQL, Django, ASP.NET Core, Angular, REST APIs
- **Cloud:** AWS (EC2, ECS/Fargate, VPC, ALB, IAM, S3, Glue, CUR), Docker, Git
- **Languages:** English (full professional proficiency), Urdu (native)