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Faisal Hakimi

Quantitative Researcher & AI Engineer

Profile

Quantitative researcher and AI engineer specializing in probabilistic modeling, machine learning systems, and scalable backend architectures. Currently investigating LLM hallucination rates and reliability metrics in generative AI. Expertise spans Bayesian optimization for algorithmic trading, genetic algorithms for constraint satisfaction, and production-grade computer vision systems with sub-10ms inference latency. Proven track record of translating complex mathematical frameworks into deployable solutions, evidenced by incubation at National Incubation Center (NIC) for pioneering security platform.

Education

2021–2025 **BS Computer Science**, *Institute of Management Sciences (IM|Sciences)*, Peshawar, Pakistan

Technical Expertise

Languages & Frameworks	Python, JavaScript, SQL, NoSQL, Django, FastAPI, React, TypeScript
Machine Learning	TensorFlow, PyTorch, Scikit-learn, Hugging Face Transformers, YOLOv5/v8, NLP, GPT-3.5, Rasa
Data Engineering	NumPy, Pandas, SciPy, PostgreSQL, MongoDB, SQL Server, Oracle, ETL Pipelines
Cloud & DevOps	AWS, GCP, Azure, Docker, GitHub Actions, CI/CD, Microservices Architecture
Quantitative Methods	Bayesian Optimization, Genetic Algorithms, Stochastic Modeling, Statistical Inference
Visualization	Power BI, Matplotlib, Seaborn, Plotly, React Charts, Custom Dashboards
Methodologies	Agile/Scrum, Test-Driven Development, REST API Design, System Architecture

Professional Experience

Sep 2024–Oct 2025 **Founder & Chief Architect**, *Bug Bounty & Penetration Testing Platform (NIC)*, Peshawar, Pakistan

- Architected and deployed region's first crowdsourced security platform, selected for incubation at National Incubation Center among top-tier startups
- Engineered secure, scalable infrastructure using Django, PostgreSQL, and Docker for real-time vulnerability reporting and automated triage systems
- Designed authentication, authorization, and secure communication protocols connecting ethical hackers with enterprise organizations
- Implemented microservices architecture supporting concurrent vulnerability assessments with 99.7% uptime

Feb 2025–Apr 2025 **Research Assistant**, *Institute of Management Sciences (IM|Sciences)*, Peshawar, Pakistan

- Conducted empirical analysis on LLM hallucination rates across diverse datasets, quantifying reliability metrics for academic publication
- Developed statistical frameworks to evaluate factual consistency and generation accuracy in large language models
- Authored research methodology and co-wrote findings for peer-reviewed academic publication on AI safety and reliability
- Collaborated with faculty on experimental design, data collection protocols, and hypothesis testing

Jun 2024–Jul 2024 **Product Development Manager (Internship)**, *Bright Network – IEUK*, Remote, United Kingdom

- Architected 6-month product roadmap for RunWize fitness platform, driving 20% increase in user engagement
- Synthesized insights from 3,900+ professional users to prioritize feature development and UX optimization
- Implemented personalized training algorithms and gamification mechanics (challenges, achievements) to enhance retention
- Led cross-functional collaboration between design, engineering, and marketing teams using Agile methodology

Jun 2025–Aug 2025 **Technology Department Intern**, *PTCL Group*, Islamabad, Pakistan

- Contributed to telecom infrastructure projects, gaining exposure to large-scale data handling and network systems
- Optimized data processing workflows, improving reporting efficiency for technical operations
- Collaborated with multidisciplinary teams on system maintenance, troubleshooting, and performance monitoring

Research & High-Impact Projects

Bayesian Optimization for Basket Trading

Technologies: Python, NumPy, SciPy, Bayesian Methods
Developed quantitative asset allocation algorithm using Bayesian Optimization to maximize out-of-sample returns while mitigating overfitting inherent in traditional statistical backtesting. Implemented acquisition functions (Expected Improvement, Upper Confidence Bound) for efficient hyperparameter search across portfolio configurations.

Real-Time Waste Classifier (YOLOv5)

Technologies: PyTorch, YOLOv5, Streamlit, Computer Vision
Engineered production-grade object detection model achieving 0.801 mAP for waste classification. Optimized inference pipeline for 10ms latency using TensorRT and model quantization. Deployed via Streamlit interface for real-time smart recycling applications.

University Scheduling System

Technologies: Django, React, PostgreSQL, Genetic Algorithms
Built full-stack platform solving NP-hard constraint satisfaction problem using custom genetic algorithm implementation. Automated conflict-free timetable generation for 2,000+ students and 50+ faculty members, reducing manual scheduling overhead by 90%.

Provenance (UNESCO Hackathon)

Technologies: NLP, Deep Learning, Computer Vision
Created award-winning deepfake detection system for digital media verification. Implemented multimodal analysis combining audio spectral features and visual artifact detection to identify AI-generated misinformation.

Hybrid Customer Support Chatbot

Technologies: Rasa, GPT-3.5, NLP, FastAPI
Architected two-tier conversational AI system combining rule-based Rasa intents with GPT-3.5 fallback generation. Achieved 90% response accuracy and reduced average resolution time by 40% through contextual dialog management.

Certifications & Professional Development

Jan 2024–Jul 2024 **Data Science & Advanced AI Bootcamp**, *AtomCamp*, Islamabad, Pakistan
Intensive training in statistical modeling, machine learning deployment, computer vision (YOLO architectures), natural language processing, and large language model fine-tuning. Completed capstone projects on predictive analytics and deep learning applications.

Publications & Research

In Preparation *Enhancing Cointegration-Based Basket Trading with Regime-Aware Multi-Asset Bayesian and Swarm Intelligence Optimization*
Focus: Quantitative Finance – Designing robust asset allocation algorithms that solve overfitting issues in traditional statistical tests through regime-switching models and hybrid optimization techniques.
Expected submission: Q2 2025.

Ongoing Research *Quantifying Hallucination Rates in Large Language Models: An Empirical Framework*
Co-authored investigation of factual accuracy and reliability metrics across multiple LLM architectures, developing statistical frameworks for AI safety evaluation.