

Md Shahedul Islam Khan

DevOps Engineer (AI Developer) · ML Engineer · AI Researcher

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PROFESSIONAL SUMMARY

AI/ML engineer and published researcher with hands-on experience building Python-based AI solutions, LLM-powered platforms, and scalable data pipelines. Experienced in deploying cloud-native services on AWS, implementing CI/CD practices via GitHub Actions, and working in Agile environments. Brings a strong background in LLM orchestration, agent design, NLP, and AI-enabled backend development — with a track record of delivering research-grade systems at enterprise scale.

TECHNICAL SKILLS

Languages	Python · SQL · Bash · LaTeX
AI / LLMs	LLM Orchestration · AI Agents · Tool Integrations · Prompt Engineering · RAG · Fine-tuning.
ML Frameworks	PyTorch · Transformers
Cloud / AWS	ECS · API Gateway · CloudFront · Lambda · S3 · AWS SAM · Terraform
DevOps / CI-CD	GitHub · GitHub Actions · Docker · Linux · Git
Data / Analytics	Apache Spark · MySQL Server · ETL Pipelines · Power BI

EXPERIENCE

Research Assistant — NLP & Bias Detection (AI) — *University of Newcastle* *Current*

Newcastle, NSW

- Designed and deployed Python-based LLM and BERT-family classifiers (BioBERT, RoBERTa, Phi-3, Mistral 7B) for multi-class bias detection in healthcare text at scale
- Implemented QLoRA fine-tuning pipeline for lightweight LLMs on cloud GPU infrastructure (RunPod H200)
- Engineered scalable data pipelines with stratified sampling, proxy signal scoring, and statistical validation; migrated workloads from local Apple Silicon to AWS-ready cloud architecture
- Integrated AI models with backend services via modular Python APIs, applying security and fairness auditing across model outputs

Associate Lecturer / Casual Academic — *University of Newcastle* *May 2024 – Present*

Newcastle, NSW

- Delivered technical instruction across data-intensive courses (Big Data, Database Management, Data Wrangling) to 900+ students over 2 years
- Mentored 100+ capstone projects, providing hands-on technical guidance on software engineering, data pipelines, and AI solutions
- Contributed to continuous curriculum improvement, adapting materials to reflect contemporary cloud and AI trends

Undergraduate Research Assistant — ML & NLP — *Northwestern Polytechnical University* *Oct 2021 –*

Jun 2022

Xi'an, China

- Built an end-to-end ML pipeline for Chinese text classification — preprocessing, transformer-based feature extraction, training, and evaluation
- Research published at ICIC 2022 (Springer), demonstrating experience in production-quality ML system delivery

KEY PROJECTS

Intelligent Library Assistant — *LLM-Powered Conversational AI Platform*

- Developed and deployed a domain-specific LLM chatbot for university library services, handling natural language queries with context-aware retrieval and response generation
- Implemented custom fine-tuning and prompt engineering pipelines; deployed end-to-end with backend Python services and institutional knowledge integration

NLP Bias Detection Pipeline — *AI Developer · Cloud-Native · AWS*

- Multi-phase AI pipeline targeting MIMIC-III clinical notes; Phase 2 benchmarked BioBERT vs RoBERTa; Phase 3 running QLoRA fine-tuning of Phi-3, Llama, and BioMistral on cloud H200 GPUs
- Designed full observability, cost tracking, and cloud deployment architecture targeting AWS ECS and API Gateway for production readiness

Phantom Signal — OSINT Social Engineering Simulation — *Industry-Affiliated · Tomago Aluminium*

- Built an end-to-end Python ML pipeline using transformer-based NLP to synthesize realistic personas from OSINT data; delivered threat mitigation recommendations to industry partner

Automated Rock Detection System — *YOLOv7 · Computer Vision · Industrial AI*

- Production-ready object detection pipeline for real-time rock classification on mining conveyor imagery; addressed variable lighting, occlusion, and high-speed inference constraints

EDUCATION

Master of Cybersecurity — *University of Newcastle*

Feb 2024 – Dec 2025

Bachelor of Engineering — Computer Science & Technology — *Northwestern Polytechnical University*

Sep 2018 – Jun 2022

PUBLICATIONS

Khan et al. (2024). *A Data-Driven Predictive Analysis on Cyber Security Threats with Key Risk Factors*. arXiv:2404.00068

Zhang, Khan et al. (2022). *An Effective Chinese Text Classification Method with Contextualized Weak Supervision*. ICIC 2022, Springer (pp. 170–182)

CERTIFICATIONS & AWARDS

- A Deep Understanding of Deep Learning — Udemy, Feb 2022
- The Complete Neural Network Bootcamp — Udemy, Jan 2023
- Stanford Machine Learning Specialisation — Coursera, Dec 2021
- Wu Yajun Scholarship & President Scholarship — Northwestern Polytechnical University
- Campus Director, Hult Prize Foundation — 2020–2021

REFEREES

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