Shek Lun Leung

Stockholm @ sheklunleung.qai@proton.me ✉ CV ✉ Portfolio ✉ Linkedin ✉ Github

Summary

Engineering Physics Master's student at KTH specializing in the translation of complex physical systems into high-performance AI models. Proven track record in **Autonomous Agent Orchestration**, **Mechanistic Interpretability**, and empirical ML research using **JAX and PyTorch**. Currently focused on bridging the simulation-reality gap and developing scalable oversight for frontier AI systems.

Core Competencies & Technical Skills

Python (Expert), JAX, PyTorch, TensorFlow, C++ (Proficient), SQL, Linux/Bash.

ML & Data Science: Multi-Agent Systems, Mechanistic Interpretability (Grad-CAM), Statistical Modeling, Monte Carlo Simulation, LLM Evaluation & Benchmarking.

Quantum & Security: QKD, Post-Quantum Cryptography (Kyber), Error Correction (Stim), Secure Protocols.

Developer Tools: Docker, Git/GitHub, Unity (AR), Manim (Math Animation), MATLAB.

Professional Experience

DreamToDone | Technical Director **October 2025 - Present**

- Architecting an AI reasoning ecosystem for creative workflows; selected as a **finalist** for the KTH Innovation/SSE pitch competition.

Grant Seeker AI | Technical Lead (Google x Kaggle Hackathon) **2025**

https://tinyurl.com/576zs4vc

- Designed a multi-agent ecosystem using Google ADK & Gemini Flash; implemented sequential orchestration (Reasoning -> Search -> Extraction) and parallel web scraping for automated proposal generation.

Metvibee | CTO & Co-founder **2023-2024**

- Designed core algorithmic architecture for sustainable urban planning; translated complex data models into actionable stakeholder demonstrations.

Selected Research & Technical Projects

ML for BB84 QKD Network Optimization | KTH **2024-2025**

- Designed a hybrid ML pipeline leveraging **JAX for high-performance data generation** and **PyTorch for model training** for real-time network optimization; achieved **~270x performance speedup** across 6,000 scenarios.

Autonomy in AI: Exploring Subjectivity in Humanoid AI **2025**

- Co-authored research on the simulation-reality gap in humanoid robots; proposed accountability frameworks for autonomous agents.

Mechanistic Interpretability Analysis **2025**

- Implemented Grad-CAM to visualize saliency maps; **investigated model robustness and identified failure modes** in CNN decision-making processes.

Quantum Error Correction (Google AI Quantum/Stim) **2025**

- Constructed and simulated surface code circuits; analyzed error propagation and noise-model thresholds.

Post-Quantum Cryptography **2025**

- Simulated **Kyber (ML-KEM)** & hybrid **AES-GCM**; benchmarked performance trade-offs across NIST security levels.
- Built a dual-mode **Nmap port scanner** for software version detection and automated vulnerability analysis.

Small Language Model **2025**

- Developed a k-gram based language model in **C++17** using transition probability matrices for text generation.

Master Thesis: Secure Communication Protocol Design & Simulation **2023**

- Authored and published a thesis on BPPM protocols; proved superior information density via Python simulations.

Education, Community, Awards & Certifications

Education

M.S. Engineering Physics (Quantum Technology) | Royal institute of Technology (KTH) (Expected 2026)

M.S. Physics (Honors) | The Chinese University of Hong Kong (2018)

Awards & Certifications

IBM Qiskit Global Hackathon Community Award (2020), International Physicist Tournament National Winner (2022), IBM Certified Associate Developer - Quantum, Stanford Machine Learning (Coursera), Delft Quantum Information.

IBM Community

Qiskit Advocate, QAMP 2025 Mentee (Certification Tutorial Development), Qiskit Hackathon Taiwan 2021 Mentor