

SURAMY PIDARA

Quantum Computing · Post-Quantum Cryptography · AI / ML & Software Engineering

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PROFESSIONAL SUMMARY

Quantum computing MS candidate (University of Wisconsin–Madison, Jan 2026–present) with a dual Computer Science and Physics foundation and close to three years of enterprise software engineering and cybersecurity at Cummins Inc., a Fortune 500 manufacturer. Graduate coursework spans quantum algorithms (Shor’s, Grover’s, Deutsch–Jozsa, Simon’s), superconducting-qubit hardware, quantum error correction, and fault-tolerant methods.

Offers an uncommon bridge into post-quantum cryptography: hands-on enterprise experience with PKI, SAML, and cryptographic security controls, now paired with graduate study of the very quantum algorithms that threaten today’s encryption. Complements this with self-directed, end-to-end delivery of production AI/ML systems — including a 63-language speech-recognition system and an automated model-training platform — and an AWS MENA Hackathon first-place win. Seeking quantum research or engineering roles within India’s growing quantum ecosystem.

KEY SKILLS

Quantum Computing (graduate coursework & projects): Qiskit · IBM Q Experience · Quantum Algorithms (Shor’s, Grover’s, Deutsch–Jozsa, Simon’s) · Variational & NISQ Methods · Quantum Error Correction (5-qubit, Steane, Shor codes) · Superconducting Qubits · Quantum Circuits & Gates

Post-Quantum & Cryptography: Lattice-Based / Post-Quantum Cryptography · RSA / Diffie–Hellman quantum-vulnerability analysis · PKI · SAML · OAuth

AI & Machine Learning: PyTorch · TensorFlow · Hugging Face Transformers · Scikit-learn · CNNs · Transformers · LLMs · Generative AI · RAG · MLOps (Dataiku)

Programming Languages: Python · Java · C / C++ · JavaScript / TypeScript · SQL · MATLAB · R

Cloud & Infrastructure: AWS (Lambda, S3, EC2, IAM) · Azure · MuleSoft Anypoint · Docker · CI/CD · Linux / Bash

Web & Mobile Development: React.js · React Native · FastAPI · Flask · Django

EDUCATION

M.S. Quantum Computing — University of Wisconsin–Madison Jan 2026 – Present

Wisconsin Quantum Institute (WQI), Department of Physics · Expected Dec 2026 / May 2027

B.Sc. Computer Science & Physics — University of Wisconsin–Madison Aug 2018 – May 2022

Kemper K. Knapp Bequest Grant Recipient · Dean’s List (×2) · AWS MENA Hackathon — 1st Place

QUANTUM PROJECTS & RESEARCH

Quantum Algorithm Implementations Qiskit / IBM Q · PHYS 709 + MIT xPRO

- Implemented Shor’s, Grover’s, Deutsch–Jozsa and Simon’s algorithms on IBM Q via Qiskit; analysed RSA / Diffie–Hellman vulnerability to quantum attack and evaluated lattice-based post-quantum cryptographic schemes.

Quantum-Safe Cryptography Study Coursework + Industry Bridge

- Assessed the migration path from classical PKI to post-quantum schemes, linking graduate quantum study directly to the enterprise cryptographic controls implemented at Cummins (below).

Deep-Learning Foundations for Quantum ML PyTorch

- Built end-to-end PyTorch pipelines (transformer text generation; CNN image classifier) as groundwork for variational and quantum-machine-learning techniques.

AI / ML PROJECT DELIVERY (INDEPENDENT)

Multilingual Speech Recognition — Vaani Project 2025 – Present · Open Source

Open-source speech recognition covering all 63 major Indian languages, where existing tools perform poorly.

- Solo-built the full system — trained on 234 GB of recorded speech across cloud GPU servers, owning the lifecycle from data pipeline to quality testing, and resolved a blocking framework incompatibility to keep training on schedule.

Automated AI Model-Training Platform 2024 – 2025 · UW–Madison

Lets anyone describe a task in plain English and receive a custom-trained model automatically — no technical input required.

- Designed and full-stack delivered a production-ready platform (web interface, processing queue, cloud storage, automated email delivery), with dataset creation automated via web search, synthetic-image generation and quality filtering.

Alzheimer’s AI Companion Application 2024 · P

- Independently built a mobile app providing AI-generated memory exercises, adaptive reminders, and geofenced caregiver alerts when a patient leaves a defined safe area.

PROFESSIONAL EXPERIENCE

Software Engineer — Cummins Inc. Aug 2022 — Jan 2025

Fortune 500 global engine & power-systems manufacturer, operating in 190 countries · Columbus, IN, USA

- Architected and deployed 700+ backend API integrations (Java, MuleSoft Anypoint) for enterprise automation, encrypted file transfer, and source/sink data exchange, underpinning a business process valued at USD 360,000/yr.
- Designed governance workflows enforcing PKI cryptographic controls and SAML authentication across the enterprise estate — the cryptographic-security foundation most directly relevant to post-quantum cryptographic migration.
- Led the ISO 27001 compliance programme across 700+ systems: coordinated cross-functional evidence gathering, defined security controls, and presented audit findings to senior stakeholders, achieving full audit readiness on schedule.
- Executed SAST and DAST scanning across 700+ API components; conducted vulnerability analysis spanning SQL injection, XSS, CSRF, race conditions and binary exploitation, resolving risks that could have exposed the business to data breach or disruption.
- Operated SIEM-based monitoring (Splunk, Suricata) and built Linux/Bash automation for security checks and compliance reporting, reducing time to detect and respond to anomalous system behaviour.

Technical Intern — Pacific Northwest National Laboratory (PNNL) Jun — Sep 2021

US Department of Energy national research laboratory · Washington, USA

- Scoped and delivered an automated scientific-computing pipeline for the Sequim Bay oceanic forecasting model (Cron, BeautifulSoup, Pandas) — data collection through processing, model execution and visualisation — within a 12-week placement; the pipeline remained in operational use after the internship ended.

Research Assistant — University of Wisconsin–Madison May 2021 — May 2022

AI-driven healthcare-monitoring research · Madison, WI, USA

- Built a React Native mobile application capturing real-time smartphone-sensor data to power an on-device MLP fall-detection model, contributing to research into edge-AI healthcare monitoring.

CERTIFICATIONS

- ▶ MIT xPRO — Quantum Computing Fundamentals (Qiskit / IBM Q, Shor's & Grover's algorithms, post-quantum lattice-based cryptography)
- ▶ Dataiku — Machine Learning, Generative AI, MLOps, Designer, Developer (LLM prompt engineering, RAG, production monitoring, responsible AI)
- ▶ Google Professional Cybersecurity Certificate (8 courses, 170+ hours — SIEM, NIST CSF/RMF, incident response)
- ▶ Stanford XACS255 — Network Security · Udacity — AI Programming with Python Nanodegree
- ▶ AWS Certified Cloud Practitioner (CLF-C02) · MuleSoft Certified Developer — Level 1