RAHUL MITRA

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EDUCATION

National University of Singapore **Aug 2023 – Jul 2027**
Bachelor of Engineering, Industrial Systems Engineering

- Pursuing a Second Major in Computer Science and a Minor in Mathematics.
- Awarded Certificate of Outstanding Performance in 3D Computer Vision (CS4277): top student in a class of 24, NUS School of Computing.

WORK EXPERIENCE

Operations Research (Contract), STMicroelectronics (NUS System Design Project) **Aug 2026 – Present**

- Design an AI-driven put-away recommendation system for STMicroelectronics' Singapore warehouse, replacing experience-based slotting with capacity-aware decisions drawn from 3 live inputs: picking history, demand forecasts, and available capacity.

Global Operational AI Systems & Data Engineer (Contract), Abbott Laboratories **Jun 2026 – Present**

- Assemble a 5-stage offline process-intelligence platform for globally distributed spray-drying plants: GPU OCR and layout parsing, recursive chunking, ONNX embeddings, a Chroma vector store, and LangChain over a locally hosted Gemma model.

Robotics Vision Engineer (AI+X Global Challenge), Amazon **Jul 2026 – Oct 2026**

- Built vision systems turning raw camera feeds into perception-ready frames across 3 workstreams: camera ISP, super-resolution, and image restoration under real-world blur.
- Reproduced a published UNet super-resolution model in PyTorch from broken author code, recovering its undocumented evaluation protocol and training 12 models across 3 scales, 2 datasets, and 2 losses, matching reported results at 8x and landing within 0.78 dB at 2x and 4x.

Platform & Solutions Engineer (Sparks Citizen Developer), People's Association **Sep 2025 – Sep 2026**

- Delivered a digital garden-plot balloting platform across admin and public frontends, backend, GIS mapping, and deployment, now production-ready for national rollout across Singapore.

Data Analytics & Product Management Intern, Abbott Laboratories **Jan 2026 – Jun 2026**

- Developed a SimPy discrete-event digital twin and OR-Tools CP-SAT solver for hybrid flow-shop scheduling, then compared 3 approaches (heuristic, MIP, and genetic algorithm) to turn production objectives and constraints into decision-ready schedules.
- Trained regional engineering teams across Asia and Europe on repeatable AI workflows spanning 7 areas: prompting, model selection, benchmarks, cost awareness, agents, validation, and safeguards.

PROJECTS

Team Lead & Finalist, Swarmline: SG Defense Tech Hackathon (1,300+ applicants) **Sep 2026**

- Directed a 5-person team to architect decentralised drone-swarm coordination on correlated random-walk search, gradient-flow dispersion, delay-tolerant gossip, cross-inhibition consensus, and response-threshold task allocation.

Finalist, Volt Pulse SG: SMU Hack For Cities (Top 8 Finalist of 50+ teams) **Jan 2026**

- Integrated SEALION embeddings, Supabase vector search, RRF routing, and scheduler-agent planning into an autonomous loop managing electricity and utility savings across multiple HDB households at once, placing top 8 of 50+ teams.

Team Lead, Maritime Deficiency Severity Forecasting: Maritime Hackathon **Jun 2025**

- Led model training for a maritime-inspection NLP system, fine-tuning a 109M-parameter BERT with DNN layers and gradient clipping on the ASPIRE 2A supercomputer.

LEADERSHIP AND ACTIVITIES

NTUC Health Active Ageing Centre, Elderly Care Volunteer **Sep 2025 – Sep 2026**

- Coordinate weekly senior-engagement activities, building empathy for healthcare, accessibility, and community-focused product design.

SKILLS AND CERTIFICATIONS

Technical: Python, PyTorch, BERT, DNN, RAG, AI agents, GPT-4, Gemini, Claude Code, ChatGPT, Codex, ComfyUI, SEALION, ONNX, Chroma, local LLM serving (llama.cpp), vector search, model evaluation, NLP; vision: camera ISP, super-resolution, image restoration, camera models and calibration, fundamental and essential matrices, epipolar geometry, absolute pose estimation, three-view geometry, structure-from-motion (SfM) with bundle adjustment, two- and multi-view stereo, generalised camera models; HPC: ASPIRE 2A, CUDA; deep RL (PPO, A2C, DDPG, DQN)
Certifications: NVIDIA Disaster Risk Monitoring with Satellite Imagery; Reinforcement Learning and Deep RL Python (Packt)