JUNCHENG MAN

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EDUCATION

MSc in Computer Engineering **Aug 2025 – Present**
National University of Singapore, Singapore GPA: 5.00/5.00
Engineering Scholars Programme, IEEE-Eta Kappa Nu (Lambda Omega Chapter)

BEng in Computer Engineering, First Class Honors **Aug 2022 – Jun 2025**
National University of Singapore, Singapore GPA: 4.87/5.00
Engineering Scholars Programme, IEEE-Eta Kappa Nu (Lambda Omega Chapter)

Study Abroad Program (Exchange Semester) **Aug 2024 – Dec 2024**
University of Colorado Boulder, United States GPA: 3.95/4.00
Relevant coursework: Semi Superconducting Quantum Computing, Foundations of Quantum Engineering

RESEARCH EXPERIENCE

Quantum Computing Graduate Researcher, Master's Project **Aug 2025 – Present**
Centre for Quantum Technologies, National University of Singapore

- Attached to the Quantum Circuits Research & Engineering Workgroup under Professor Yvonne Y. Gao
- Supported the development of a 3-mode bosonic cQED device aimed at realizing programmable beam-splitter interactions for remote entanglement generation and state transfer
- Performed electromagnetic simulations in Ansys HFSS to optimize device geometries and utilized pyEPR algorithm to validate Hamiltonian parameters against design goals
- Characterized device components through cryogenic measurements, including spectroscopy, time-domain qubit control, and coherence measurements

Quantum Computing Research Intern **May 2025 – Jul 2025**
Centre for Quantum Technologies, National University of Singapore

- Attached to the Quantum Circuits Research & Engineering Workgroup under Professor Yvonne Y. Gao
- Optimized the dispersive readout protocol for transmon qubits through high-fidelity readout simulation and custom FPGA pulse-shaping based on the CLEAR protocol
- Improved single-shot readout fidelity by 1-3% and reduced post-readout residual photons by 3-10 times
- Collaborated with graduate students in the lab to implement the protocol on their measurement setups

SELECTED PUBLICATIONS

Man, J., Hong, L.S., Tio, E.S.Y., & Panicker, R.C. (2024). **ARIELLE: AR-based Independent and Experiential Language Learner on the Edge**. 2024 IEEE Asia Pacific Conference on Circuits and Systems (APCCAS), 614–617. [IEEE Link]

TEACHING EXPERIENCE

Graduate Teaching Assistant, Computer Engineering Capstone Project **Aug 2025 – Apr 2026**
School of Computing, National University of Singapore

- Tutored and provided technical training for a class of 60 undergraduate seniors for their capstone project
- Guided students weekly in implementing a custom neural network accelerator on Xilinx FPGA for real-time action recognition tasks
- Designed project evaluation rubrics and assessed students' progress through regular project milestones

Undergraduate Teaching Assistant, Engineering Principles and Practice II **Jan 2025 – May 2025**
College of Design and Engineering, National University of Singapore

- Prepared and maintained laboratory equipment, ensuring smooth lab sessions on a biweekly basis
- Supervised and guided two groups of 15 students each during hands-on lab projects, assisting with debugging and supporting them in successfully delivering a remote-controlled robotic vehicle for navigating complex terrains

TEACHING EXPERIENCE CONTINUED

Student Instructor, mBot Robotics Workshop 2023 **Dec 2023**

College of Design and Engineering, National University of Singapore

- Co-instructed a 3-day workshop for a group of 60 high school students, teaching programming fundamentals and guiding them to implement a maze-navigating robotic vehicle

Undergraduate Teaching Assistant, Engineering Principles and Practice I **Aug 2023 – Dec 2023**

College of Design and Engineering, National University of Singapore

- Prepared and troubleshooted laboratory equipment biweekly, ensuring uninterrupted lab sessions
- Managed and guided two groups of 15 students each through hands-on projects and debugging, supporting them in delivering an autonomous maze-navigating robotic vehicle
- Graded lab reports and provided detailed, constructive feedback to students

AWARDS & HONORS

NUS Engineering Scholars Programme **Aug 2022 – Present**

Full scholarship with 100% tuition fee coverage and generous allowances

- Around 50 scholarships awarded out of around 1500 engineering freshmen
- Accelerated pathway to complete 3 years BEng + 1 year MSc

IEEE-Eta Kappa Nu (Lambda Omega Chapter) **Aug 2023 – Present**

Honor society of IEEE, promotes excellence in the profession and in education

- Around 25 inducted out of around 400 electrical and computer engineering sophomores
- Emphasis on the 3 ideals of scholarship, character and attitude

Dean's List, all eligible semesters (including study abroad) **Aug 2022 – Jun 2025**

- Celebrates the scholastic accomplishments of students who rank within the top 5% of their cohorts

1st Place Winner, Intel Cup Undergraduate Electronic Design Contest 2024 **Jul 2024**

- Led a team of 3 to develop an augmented reality-based computer-assisted pronunciation training application on the Intel Nezha Board to help rural children practice English pronunciation on everyday objects without the need for Internet access
- Achieved first place winner amid strong international competition from more than 100 teams

3rd Prize Winner, National AI Student Challenge 2024 **May 2024**

- Collaborated within a team of 3 to deliver an LLM-based phishing email checker Google chrome extension integrated with OpenAI GPT-3.5 API
- Achieved third place winner among 6 finalist teams after a competitive national elimination round

IPS Cadi Scientific Award for The Public Awareness of Physics 2021 **Sep 2022**

- Recognized as part of the Singapore Physics League competition team for demonstrating outstanding inspiration, innovation, and enthusiasm in promoting physics to the public

PROFESSIONAL EXPERIENCE

Application Engineer Intern **Jan 2024 – Jun 2024**

Trane Technologies, Singapore

- Researched the first in-house end-to-end machine learning pipeline proof-of-concept using Microsoft Azure services for optimizing chiller plant predictive controls
- Spearheaded the first migration of on-premises SQL Server to Azure and established data pipeline with local BACnet chiller plant controllers
- Programmed DDC controllers to achieve chiller plant automation and optimize chiller plant energy efficiency

LEADERSHIP & EXTRACURRICULARS

Founding Member, NUS AI Thinking **Jan 2023 – Jul 2024**

National University of Singapore

- Collaborated with founding team to establish a generative AI interest group, organizing talks, workshops, and discussions on emerging AI applications for the student body
- Pioneered and co-facilitated AI Art Hack 2023, the electrical and computer engineering department's first generative AI hackathon, exploring the use of AI for educational storyboard generation

Organising Team, Singapore Physics League (SPhL) **Jan 2021 – Dec 2023**

- Pioneered Singapore's largest online Physics competition for secondary and pre-university students
- Collaborated with the organising committee to design problem diagrams, competition branding, and the official SPhL mascot used across outreach campaigns
- Contributed to problem development by internally testing questions and providing feedback to ensure clarity and appropriate difficulty for participants

TECHNICAL SKILLS

Quantum Hardware & Experimental Techniques

Familiarity with superconducting circuit elements (Transmon, SQUID, SNAIL); circuit QED framework; qubit control and characterization; cryogenic and microwave measurements; electronic instrumentation (VNAs, signal generators, oscilloscopes)

Modeling & Computational Tools

Quantum circuit simulation (QuTiP); electromagnetic design and Hamiltonian parameter extraction (Ansys HFSS, pyEPR); data fitting and optimization

Programming & Automation

Python, C/C++, Verilog, QUA (Quantum Machines); data processing and visualization (NumPy, SciPy, pandas, matplotlib); machine learning for experimental optimization (PyTorch, scikit-learn, TensorFlow); version control and automation workflow tools (Git, Github, Linux bash scripting)