

WONG WAI KUI, CHRIS

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SUMMARY

IT engineer with an MSc in Physics and hands-on experience debugging TCP-based railway and ticketing systems in Japan. Strong in Python, C++, C#, Linux, protocol-level analysis, scientific computing, and local-first AI tooling. Proven ability to investigate multi-layer communication issues, validate behavior with simulators and logs, and build reproducible tools for simulation, retrieval, and technical documentation. Currently based in Japan and open to remote and hybrid opportunities.

CORE SKILLS

Programming	Python, C++, C#, numerical scripting, automation
Systems & Protocol Debugging	TCP/IP debugging, custom binary protocols, Linux logs, client-server systems, simulator-based validation
AI/LLM Tooling	RAG pipelines, local LLM/STT/TTS and voice-cloning workflows, SQLite FTS, hybrid vector search, document chunking, MCP, AI-assisted development
Scientific & Numerical Computing	Numerical methods, simulation, finite-difference methods, Monte Carlo methods, Gross-Pitaevskii modeling, data analysis
Data & ML Tools	NumPy, Pandas, SciPy, Matplotlib, PyTorch, CuPy
Engineering Tools	uv, Git, Docker, Qt 5, MATLAB, LabVIEW, pySerial, PyVISA

PROFESSIONAL EXPERIENCE

IT Engineer (SES), ALTEN Japan, Utsunomiya	04/2026 – 06/2026
- Support development and validation of a railway IC card and cloud ticketing platform across host, relay, and logic-server communication layers. - Diagnose TCP/IP communication defects using Linux logs, simulator behavior, network checks, and C++ source-code investigation. - Analyze custom binary protocol behavior, including reconnect handling, device identity, sequence-number handling, and message framing. - Redesigned the C++ TCP send path to assemble complete protocol messages in a contiguous buffer before transmission, preventing unintended split writes and improving communication reliability. - Build internal debugging and documentation workflows to support Japanese technical specification review, validation, and issue reporting.	
Assistant Research Engineer, Amonics Ltd., Hong Kong	12/2021 – 02/2023
- Built Python tools for RS232 communication with laser modules using pySerial, reducing manual testing effort. - Automated GPIB-based measurement collection and processing with PyVISA, improving repeatability of lab workflows. - Performed optical component testing, technical analysis, and hardware issue troubleshooting across multiple instruments. - Produced RMA reports and supported failure investigation with data-backed diagnostics.	

EDUCATION

MANABI Japanese Language Institute Tokyo Campus	01/2025 – 03/2026
MSc in Physics, The Chinese University of Hong Kong	09/2020 – 11/2021
BSc in Applied Physics, The City University of Hong Kong	09/2018 – 07/2020
Higher Diploma in Mechanical Engineering, Hong Kong Institute of Vocational Education	09/2015 – 06/2017

LANGUAGES

English	Fluent (TOEIC 780)
Japanese	JLPT N2 level
Cantonese	Native
Mandarin	Conversational

PROJECTS

Physics Projects

- **2019 – NP-Complete Problems in Combinatorial Optimization:** Applied genetic algorithms and self-organizing maps to solve the traveling salesman problem.
- **2020 – CHSH Inequality and Wave-Particle Duality Demonstration Using Entangled Photon Pairs:** Investigated wave-particle duality, photon entanglement, Bell's theorem, and CHSH inequality using a quED entanglement demonstrator.
- **2021 – Grouped Schrödinger Equation Solvers and Simulations:** Built 1D, 2D, and 3D time-independent solvers plus 1D and 2D time-dependent solvers for arbitrary potentials; includes [1D](#), [2D](#), and [3D](#) TISE outputs.
- **2021 – Classical Analog of Electromagnetically Induced Transparency:** Reproduced EIT-like behavior with coupled RLC circuits as a classical analog of quantum interference effects.
- **2021 – Computing Band Structures:** Computed electronic band structures for materials in Quantum ESPRESSO using density functional theory workflows.
- **2021 – Topological Photonics:** Studied Berry phase, 1D diatomic crystal models, and the integer quantum Hall effect in topological photonics.
- **2022 – Monte Carlo Simulation of the 2D Ising Model in Python:** Simulated thermodynamic properties of a 2D binary alloy model using Monte Carlo methods.
- **2022 – Reproducing EIT-Like Behavior by Solving Coupled Simple Harmonic Oscillators Numerically:** Solved coupled second-order differential equations with multiple ODE solvers.
- **2024 – 2025 – Laser Cooling and Atomic Physics Simulations:** Studied P-wave Feshbach molecules and built simulations for 1D laser cooling and 2D magneto-optical trapping of Rubidium-87; includes [1D cooling](#) and [2D MOT](#).
- **2025 – Quantum Wavepacket Dynamics in a 2D Lattice with Defects:** Simulated 2D wavepacket propagation with Crank-Nicolson time stepping to study scattering and localization.
- **2026 – Protocol-Dependent Vortex-Threshold Diagnostics in a Rotating Gross-Pitaevskii Condensate:** Built a reproducible 2D finite-difference Gross-Pitaevskii simulation workflow with rotating-frame relaxation, phase-winding vortex detection, density/flow diagnostics, and robustness checks for trap anisotropy, interaction strength, grid resolution, random seed, ramp step, timestep, and box size.

Engineering Projects

- **2025 – 1D Schrödinger Equation Solver and Visualizer in C++:** Built an object-oriented C++ desktop application with a separate numerical core and Qt GUI using Eigen and FFTW.
- **2025 – Full-Stack Twitch Clip Audio Extractor with Video Preview and Time Selection:** Developed a web application using Node.js, Express, and FFmpeg for clip download, trimming, and MP3 conversion.
- **2025–2026 – Local RAG Desktop Reader:** Built a Windows PDF/EPUB reading app with folder import, scoped questions, source-linked citations, SQLite storage, local LM Studio inference, and English/Chinese/Japanese UI.
- **2025 – Reinforcement Learning: Monte Carlo vs Q-Learning in GridWorld:** Implemented and compared Monte Carlo Control and Q-Learning with visualizations of convergence and policy learning.
- **2025 – Realtime Object Detection Using YOLO:** Built a modular real-time object detection system supporting webcam, YouTube, and local video inputs.
- **2026 – Tiny LLM Lessons:** Built a PyTorch learning pipeline for a small decoder-only Transformer from scratch, covering tokenizer experiments, RoPE, attention, FineWeb-Edu pretraining shards, Alpaca-style SFT, CUDA training, checkpoint resume, and generation scripts.
- **2026 – RagMemory:** Built a local persistent-memory system for Codex workflows with hook-based recall/save, structured memory extraction, decay-aware retrieval, an Obsidian mirror, background compaction, and tombstone-based removal for wrong or private memories.
- **2026 – DocMemory:** Built a local Markdown document search tool using SQLite FTS, optional FastEmbed vector search, hybrid keyword/vector ranking, Windows launchers, experimental DirectML/OpenVINO vector builds, and a read-only MCP server for agent workflows.
- **2026 – M365 Copilot OpenAI Proxy:** Built a FastAPI prototype that exposes Microsoft 365 Copilot chat through OpenAI-compatible API routes, with MSAL device-code authentication, streaming response support, environment-based configuration, and admin-consent diagnostics.
- **2026 – Local Document Conversion Tools:** Built Windows drag-and-drop tools for Office-to-PDF and PDF-to-Markdown conversion, including recursive folder handling, Japanese filename safeguards, MinerU-based Markdown extraction, skip logic, and failure logs.
- **2026 – Local Meeting STT:** Built a multilingual Windows Electron app for local system-audio/microphone recording, Whisper live captions, and Whisper/Qwen3-ASR file transcription.
- **2026 – Capture Studio: 3D Gaussian Splatting Pipeline:** Built a local Windows photo-to-3DGS pipeline with photo-quality analysis, GPU COLMAP reconstruction, CUDA/gspat training, resumable densification, held-out PSNR/SSIM/L1 evaluation, SH-preserving PLY export, and an interactive Viser WebGL viewer.
- **2026 – OmniVoice Local Voice Studio:** Built a private OmniVoice UI for zero-shot voice cloning and multilingual TTS with saved Cantonese/Mandarin prompts, Gradio controls, and faster-than-real-time generation on an RTX 5070 Ti.
- **2026 – Industrial Visual Anomaly Detection:** Implemented a PyTorch PatchCore pipeline with normal-only calibration, defect heatmaps, and an autoencoder baseline. Achieved 1.0000 image AUROC and 0.9884 pixel AUROC on MVTec AD bottle; evaluated few-shot accuracy, memory, and GPU latency across 20 PatchCore runs.
- **2026 – Laya Decision Demos (Snake, Tetris):** Built local CUDA demos that display fresh model choices, executed actions, safety or placement guards, latency, and heuristic baselines without game-specific training.