HO YIN KELVIN, LEE

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OVERVIEW

- Computing Science graduate with over 5 years of combined industry and academic experience in software development, testing, and research, with a focus on scientific computing and healthcare
- Proven ability to thrive in agile, cross-functional teams and fast-paced environments, delivering scalable, user-centric solutions in both commercial and research-driven contexts
- Proficient in C/C++, Python, TypeScript and Swift, with experience deploying applications and services using Amazon Web Services (AWS) and Google Cloud Platform (GCP)
- Strong background in data analysis and numerical computing, leveraging frameworks like NumPy, Pandas, Matplotlib, and SciPy to work with high-volume, complex datasets

EDUCATION

Simon Fraser University   Sept 2016 - Dec 2021
Bachelor of Science, Computing Science

PROFESSIONAL TRAININGS

TCPS 2: CORE-2022 (Course on Research Ethics), Panel on Research Ethics
Issued Dec 2023

Canada GCP - Research Coordinator/Assistant 1, Collaborative Institutional Training Initiative
Issued Dec 2023, expires Dec 2026

WORK EXPERIENCE

The Hospital for Sick Children (SickKids)

Programmer/Analyst   Sept 2025 - Present
- Developed infrastructure for CAPTsure (Clinical Assessment of PTS), a diagnostic tool for pediatric post-thrombotic syndrome (PTS), enabling 10+ researchers and 150+ patients to monitor compression garment adherence and daily activity
- Integrated custom-built wearable hardware with a cross-platform mobile application (React Native, Expo), enabling real-time data collection and seamless user experience across devices
- Developed and deployed a cloud-based administration dashboard (AWS Cognito, AWS Lambda, Amazon RDS) for real-time monitoring and analysis of wearable data, including automated activity metrics calculation to eliminate manual patient logging

Clinical Research Project Assistant   Jan 2023 - Present
- Examined the association between high-level moderation to physical activities & social networking and less fatigue & depression among youth with multiple sclerosis, and assessed the technical considerations and practical applications of consumer-grade wearables (e.g., Fitbit, Apple Watch) in pediatric clinical trials
- Migrated and modernized ATOMIC, a native iOS app originally built in Objective-C, by rebuilding it using Swift and SwiftUI to enhance maintainability, performance, and user experience; currently deployed to 100+ study participants across 5 research institutions, the app supports personalized health interventions and real-time activity tracking for youth with multiple sclerosis
- Integrated wearable and health data sources into the app ecosystem using Apple CoreMotion, SensorKit, HealthKit, Firebase Realtime Database, and REDCap, enabling automated, real-time monitoring of physical activity
- Architected and optimized a web-based data dashboard (Next.js, Python, Firebase Cloud Functions) to provide 25+ researchers and coaching staff with real-time visualizations, trend analysis, and participant monitoring tools to support clinical decision-making

McMaster University

Research Software Developer   Feb 2022 - Present

- Designed, built and optimized research software tools supporting 500+ McMaster researchers across 15+ research facilities and research groups; key projects include:

    - McMaster Lab Information Management System (LIMS): built and maintained a robust PHP/MySQL application using MVC design principles to streamline sample tracking, instrument usage and data management
    - Open-source bibliometric tools: developed Python-based Jupyter Notebook solutions leveraging internal and external data sources (e.g. OpenAlex, Dimensions and Altmetric) for advanced research impact analysis, citation metrics, and visualization to support trend analysis, collaboration mapping, and institutional reporting, cutting analysis time from days to minutes

- Contribute to open-source research software ecosystems, triaging issues and delivering patches for projects such as whisper.cpp, LangChain, and CiteLang, with a focus on data collection, processing, analysis, and citation workflows
- Led 16 training initiatives—including 2 grant-funded programs—by developing and delivering Carpentry-style workshop materials on research-focused software engineering topics such as technical project management, software containerization (Docker, Apptainer), web security (OWASP), web accessibility (WCAG, AODA), and AI-driven research data management, enhancing digital research capabilities across disciplines
- Develop institutional recommendations for research software management, embedding FAIR principles, open science, and reproducibility into software development practices; contributions recognized at both institutional and international levels

Simon Fraser University

Undergraduate Research Assistant   Apr 2021 - Aug 2022

- Analyzed central mass density trends in galaxies undergoing quenching, identifying correlations with supermassive black hole masses and their influence on galaxy evolution
- Developed and executed high-throughput HPC workflows on a SLURM-managed cluster to process and visualize large-scale (IllustrisTNG) simulations data using Python, Matplotlib, and Astropy, enabling efficient analysis of the compaction phase in late-stage galaxy evolution
- Led science outreach initiatives, presenting findings to regional astronomy communities and academic audiences to promote public engagement in computational astrophysics

NETGEAR

Software Developer   Sept 2019 - Apr 2020

- Resolved 100+ software issues by collaborating with customer support teams to triage and troubleshoot field-reported bugs, resulting in improved system stability and reduced issue turnaround time
- Collaborated with the UX team to design and optimize user interfaces using Swift (MVC pattern) and Objective-C, enhancing responsiveness, accessibility, and overall user experience across iOS devices through user-centred design and iterative testing
- Integrated business analytics tools and implemented secure data transmission via SOAP and REST APIs, strengthening data visibility while maintaining compliance with security and privacy standards

Certification Engineer (Co-op)   Jan 2019 - Aug 2019

- Configured and optimized LTE and 5G mobile hotspot products for regulatory compliance across international carrier networks, while developing and maintaining automated tools to streamline data analysis, workflow processes, and testing for LTE Advanced Carrier Aggregation—significantly improving test coverage and operational efficiency
- Led triaging and debugging efforts in a fast-paced agile environment, collaborating closely with firmware, software, and certification teams to resolve 100+ customer-reported issues
- Implemented build and automation scripts using Python, C#, .NET, AT commands and Visual Basic, reducing manual overhead and accelerating deployment for certification testing

VOLUNTEERING AND SERVICES

Canadian Science Policy Centre

Evaluation and Reports Committee Member   Mar 2025 - Present

Grant Writing and Research Committee Member   Feb 2025 - Present

Research Software Alliance

Actionable FAIR Research Software Guidelines Task Force   Nov 2024 - Present

Stable Matching Quantum Algorithm   May 2021 - Jul 2021
Research in Theoretical Computing (Academic)

- Developed a quantum algorithm leveraging Grover's search to solve the stable matching problem with $O(n\sqrt{n})$ complexity, significantly outperforming the classical Gale-Shapley algorithm ($O(n^2)$)
- Designed and implemented search black boxes for all entities, optimizing quantum state representation and improving computational efficiency
- Engineered a stability evaluation method to analyze all possible stable matches, achieving 75% accuracy on the Qiskit Aer quantum computing simulator

Variable Star Photometry   Jan 2021 - Apr 2021
Research in Observational Astrophysics (Academic)

- Developed an observation proposal detailing optimal target selection and telescope usage time calculations, contributing to an article with methodology, results and visual data representations
- Processed and calibrated astronomical imaging data using Python and astrophysics libraries (e.g. SEP) to correct for atmospheric extinction and cosmic rays, improving data accuracy
- Analyzed luminosity periodicity in variable stars by applying statistical and computational techniques, identifying patterns relevant to astrophysical research