Ho Yin Kelvin, Lee - Curriculum Vitae

CONTACT

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Portfolio Websites: ORCID, Personal Website, GitHub, LinkedIn

RESEARCH INTERESTS

Interdisciplinary research software development, Health informatics, Mobile health and wellness apps, Wearable devices, Meta-research on FAIR scholarly outputs and research reproducibility, (Open) Science policy

EDUCATION

Bachelor of Science, Computing Science, Simon Fraser University 2021

HONOURS AND AWARDS

Dean's Honour Roll, Simon Fraser University 2021
First Place in FAS Competition, Simon Fraser University 2019

ACADEMIC RESEARCH EXPERIENCE

Clinical Research Project Assistant - The Hospital for Sick Children (SickKids) Jan 2023 - Present
Supervised by Dr. Samantha Stephens

- 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 50+ study participants, 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 20+ researchers and coaching staff across 3 research sites with real-time visualizations, trend analysis, and participant monitoring tools to support clinical decision-making

Undergraduate Research Assistant - Simon Fraser University Apr 2021 - Aug 2022
Supervised by Dr. Joanna Woo

- 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

ACADEMIC PROJECTS

Stable Matching Quantum Algorithm - Project Link May 2021 - Jul 2021

- Developed a quantum algorithm leveraging Grovers 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 - Project Link Jan 2021 - Apr 2021

- 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

Professional Experience

Research Software Developer, McMaster University	Feb 2022 - Present
Software Developer, NETGEAR	Sep 2019 - Apr 2020
Certification Engineer (Co-op), NETGEAR	Jan 2019 - Aug 2019

Governance & Oversight Committees

Mar 2025 - Present: Evaluation and Reports Committee Member Canadian Science Policy Centre

Feb 2025 - Present: Grant Writing and Research Committee Member Canadian Science Policy Centre

Nov 2024 - Present: Actionable FAIR Research Software Guidelines Task Force Research Software Alliance

Professional Memberships & Licenses

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.