Curriculum Vitae

Li, Kwing Hei

June 27, 2025

Basic Info

Preferred name: Heili

Email: hei.li@cs.au.dk

Web: https://hei411.github.io/

Research Topics

I develop higher-order separation logic to reason about programs that utilize both probability and concurrency. At the moment, I am also interested in related topics, such as formal verification, type theory, security, and distributed systems.

Education

2023 - 2027	Ph.D. in Computer Science (in progress) Aarhus University
2022 - 2023	M.Phil in Advanced Computer Science (Pass with Distinction) King's College, University of Cambridge Title: Wait-Free Task Solvability of Asynchronous Distributed Models [pdf]
2019 - 2022	B.A. Hons. in Computer Science with Mathematics (1st class) Churchill College, University of Cambridge Title: Type Systems for Functional Reactive Programming [pdf]

Publications

2025	**Modular Reasoning about Error Bounds for Concurrent Probabilistic Programs** [preprint] Kwing Hei Li, Alejandro Aguirre, Simon Oddershede Gregersen, Philipp G. Haselwarter, Joseph Tassarotti, Lars Birkedal *ICFP 2025*
2025	**Approximate Relational Reasoning for Higher-Order Probabilistic Programs** [pdf] Philipp G. Haselwarter, Kwing Hei Li, Alejandro Aguirre, Simon Oddershede Gregersen, Joseph Tassarotti, Lars Birkedal *POPL 2025*
2024	**Tachis: Higher-Order Separation Logic with Credits for Expected Costs** [pdf] Phillipp G. Haselwarter, Kwing Hei Li, Markus de Medeiros, Simon O. Gregersen, Alejandro Aguirre, Joseph Tassarotti, Lars Birkedal *OOPSLA 2024*

2024 **Error Credits: Resourceful Reasoning about Error Bounds for Higher-Order Probabilistic Programs** [pdf]
Alejandro Aguirre, Philipp G. Haselwarter, Markus de Medeiros, Kwing Hei Li, Simon Oddershede Gregersen, Joseph Tassarotti, Lars Birkedal
ICFP 2024
Recipient of Distinguished Paper Award

2022 **Secure Aggregation for Federated Learning in Flower** [pdf]
Kwing Hei Li, Pedro Porto Buarque de Gusmão, Daniel J. Beutel, Nicholas D. Lane
DistributedML 2021

Experience

2022 Research Intern
Max Planck Institute for Software Systems
Supervisor: Prof. Derek Dreyer and Dr. Michael Sammler

2021 Undergraduate Research Intern
University of Cambridge Machine Learning Systems Lab
Supervisor: Prof. Nicholas Lane and Dr. Pedro Porto Buarque de Gusmao

2020 Automation Engineer Intern
DreamsAI, Hong Kong

Awards

2022 Beatrice Blore-Browne Prize Scholarship
2022 Cambridge Trust and King's College TPP Alan Turing Scholarship
2022 University of Oxford Hong Kong Jockey Club Graduate Scholarship (declined)
2022 Churchill Prize Scholarship
2021 Beatrice Blore-Browne Prize Scholarship
2021 Churchill Prize Scholarship
2021 Churchill Computer Science Talks Series – Audience Favourite Talk
2020 Churchill Honorary Scholarship

Unpublished Drafts

2023 **The Fundamental Theorem of Asynchronous Distributed Models in Intuitionistic Logic** [pdf]
Kwing Hei Li

2022 **Formalizing May's Theorem** [pdf]
Kwing Hei Li

2022 **Flower: A Friendly Federated Learning Research Framework** [pdf]
Daniel J. Beutel, Taner Topal, Akhil Mathur, Xinchi Qiu, Javier Fernandez-Marques, Yan Gao, Lorenzo Sani, Kwing Hei Li, Titouan Parcollet, Pedro Porto Buarque de Gusmão, Nicholas D. Lane

Roles

2024 -	Volunteer Mellemfolkeligt Samvirke
2022 - 2023	Safety and Welfare Officer Churchill College Boat Club
2021 - 2022	Computing Officer Churchill College JCR Committee
2020 - 2022	Coxing Captain Churchill College Boat Club

Skills

Coding: Rocq, Haskell, C++, Java, OCaml, Python, Eva
Languages: English (fluent), Cantonese (fluent), Mandarin (conversational)