

Lucas Shigeru Stinchcombe

ucaplss@ucl.ac.uk | lucasstinchcombe@gmail.com | 21347.net/cv.pdf

EDUCATION

University College London

PhD, Computer Science

- Centre for Doctoral Training (CDT) in Quantum Computation and Quantum Communications

September 2025 – Current

London, United Kingdom

Simon Fraser University

Master of Science, Computing Science

- Research in classical simulation of quantum algorithms.

September 2022 – August 2025

Burnaby, BC, Canada

McGill University

Bachelor of Science, Honours Computer Science

- Honours project in adversarial strategies for zero-knowledge proofs for NP.

September 2013 – May 2017

Montreal, QC, Canada

RESEARCH EXPERIENCE

Graduate Research Assistant

Conducted under Matthew Amy at Simon Fraser University

- Proved the classical simulation of a class of quantum algorithms used in simulation benchmarks.

September 2022 - August 2025

Burnaby, BC

Research Intern

Conducted under Ichiro Hasuo at the National Institute of Informatics

- Research in categorical constructions for predicate transformers of quantum programs using fibrations.

August 2024 - January 2025

Tokyo, Japan

Undergraduate Research

Conducted under Claude Crépeau at McGill University

- Research in zero-knowledge proofs protocols in a setting with constant number of commitments.

January 2017 - May 2017

Montreal, QC

PUBLICATIONS

Polynomial-Time Classical Simulation of Hidden Shift Circuits via Confluent Rewriting of Symbolic Sums [[arxiv:2408.02778](https://arxiv.org/abs/2408.02778)]

Quantum 9

Matthew Amy, Lucas Shigeru Stinchcombe

- Demonstrates that a formal rewrite system for boolean path sums is *confluent* in general. Applying the rewrite system results to a widely used benchmark algorithm resolves the conjecture of its polynomial-time classical simulation.

Practical Relativistic Zero-Knowledge for NP [[arxiv:1912.08939](https://arxiv.org/abs/1912.08939)]

ITC 2020

Claude Crépeau, Arnaud Y. Massenet, Louis Salvail, Lucas Shigeru Stinchcombe, Nan Yang

- Exhibits two novel zero-knowledge protocols for 3-Colorability that use two local provers and three entangled provers, requiring only one edge, 2 bits and 2 trits of communication per prover.

TALKS

Polynomial-time Classical Simulation of Roetteler's Shifted Bent Function Algorithm [[POPL24:PlanQC](https://arxiv.org/abs/2408.02778)] [[BIRS:24w5307](https://arxiv.org/abs/2408.02778)]

January, May 2024

PlanQC 2024, BIRS 2024

- Presented preliminary results of *Polynomial-Time Classical Simulation of Hidden Shift Circuits via Confluent Rewriting of Symbolic Sums* at PlanQC 2024 and BIRS 2024 workshops.

TEACHING EXPERIENCE

Category Theory Reading Group

National Institute of Informatics

- Delivered weekly lectures on category theory, based on *Categories for the Working Mathematician* by Saunders Mac Lane.

August 2024 – Current

Tokyo, Japan

CMPT 476: Introduction to Quantum Algorithms Teaching Assistant

Simon Fraser University

Jan 2024 – April 2024

Burnaby, BC

WORK EXPERIENCE

Senior Software Engineer

August 2017 - August 2021

Bloomberg L.P.

Tokyo, Japan

- Optimization of a C++ implementation of Myer's difference algorithm resulting in tenfold speed up.
- Developed command-line tools to investigate and manipulate a proprietary binary format of exchange data.
- Designed and implemented a large-scale distributed ingestion system of market data to a central visualization tool.

Lead Software Engineer

September 2015 – June 2017

Nimbus Learning

Montreal, QC

- Developed a platform to connect tutors and students and analytics to identify struggling students.
- Licensed to twenty five universities across North America.

Software Engineer Intern

May 2016 – August 2016

Rakuten

Tokyo, Japan

- Wrote an application health library to monitor services in Java with the SpringBoot framework.

MISCELLANEOUS ACHIEVEMENTS AND PROJECTS

Dobson Cup 2017

March 2017

- Semifinalist of the Dobson Cup for Entrepreneurship
- Registered as Apollo, an education startup which was later incorporated as Nimbus Learning.

Mhacks 2015

September 2015

- First place in the Android app category.
- Built a prototype application to compute efficient commutes using real-time user data.

TECHNICAL SKILLS

Natural Languages: English (Native), Japanese (Fluent), French (Intermediate)

Programming Languages: C++, Python