Thomas C. Fraser

October 10th, 2018
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OBJECTIVE

Studying quantum information and quantum foundations. An emphasis on computational methods and teaching is also desired.

EDUCATION

2018 – PRESENT	**Ph.D., Quantum Information**	
	Perimeter Institute For Theoretical Physics	
2017 – 2018	**M.Sc., Theoretical Physics, Quantum Information**	
	Thesis: A Combinatorial Approach To Causal Inference	
	Perimeter Scholars International Program, Perimeter Institute For Theoretical Physics	
2012 – 2017	**B.Sc., Mathematical Physics, Astrophysics Specialization**	
	Cumulative Average: **97.79%**	
	University of Waterloo, Waterloo, ON	
2008 – 2012	**High School Diploma**	
	Specialist High Skills Major (SHSM) in Energy	
	Renfrew Collegiate Institute, Renfrew, ON	

AWARDS & SCHOLARSHIPS

2018	**UW Graduate Award & Marie Curie Award**
	Sufficiently High Entrance Average, Department Selected
2018	**The Joanne Cuthbertson and Charlie Fischer Graduate Student Award**
	Support for an exceptional Masters student from the 2017/2018 PSI class
2017	**Governor General's Silver Academic Medallion**
	Highest Graduating Average in Graduating Class
2016	**Mike Lazaridis Scholarship**
	Theoretical Physics Fellowship at Perimeter Institute
2015	**Xerox Research Centre of Canada Limited Award**
	Best Work-term Report "Acoustic Modelling Using Mel-Frequency Cepstral Coefficients"
2015	**C. C. Lim Physics Prize**
	Top Marks in Undergraduate Thermodynamics
2013	**Don E. Brodie Scholarship**
	Highest Experimental Physics Lab Performance
2012	**A. Donald Maynes Scholarship**
	Outstanding Academic Record
2012	**BMO Undergraduate Entrance Scholarship**
	Outstanding Academic Average
2012 – 2017	**Dean's Honour List**
	Academic Performance
2012	**President's Distinction Scholarship**
	Entrance Average
2012	**Governor General's Bronze Academic Medallion**
	Highest Graduating Average in Graduating Class

ACADEMIC WORKS

Published

APRIL 2018   *Machine Learning Peeling and Loss Modelling of Time-Domain Reflectometry*
J. R. Rinehart, J. H. Bǎľjanin, T. C. Fraser, M. Mariantoni

SEPTEMBER 2017   *Causal Compatibility Inequalities Admitting of Quantum Violations in the Triangle Scenario*
T. Fraser, Elie Wolfe

Invited Talks At Conferences

NOVEMBER 2016   Quantum Networks Conference at International Institute for Physics, Natal, Brazil
Causal Compatibility Inequalities Admitting of Quantum Violations in the Triangle Scenario

Course Notes

WINTER 2016   *General Relativity*
WINTER 2016   *Statistical Mechanics*
FALL 2016   *Applied Probability*
FALL 2016   *Quantum Physics 3*
FALL 2016   *Electricity & Magnetism 3*
FALL 2016   *Cosmology*

Project Papers

APRIL 2016   *Variations in Stellar Metallicity*
T. Fraser

JANUARY 2016   *Acoustic Modelling Using Mel-Frequency Cepstral Coefficients*
T. Fraser

COMPUTATIONAL SKILLS

LANGUAGES   C, C++, Python, Mathematica, Matlab, HTML, CSS, Actionscript, JavaScript, Java, Scheme, Basic, LaTeX

METHODS   Machine Learning, Linear Programming, Graph Theory, Group Theory, PDE Solvers, Linux/Unix Systems, Distributed Systems, Android & iOS App development

CREATIVE TOOLS   Adobe Suite, AutoCAD 3D, Vector Graphics, Video editing, 3D Animation/Modeling, Graphic Design

Research & Work Experiences

Mike Lazaridis Fellow
Perimeter Institute For Theoretical Physics. Waterloo, ON   May 2016 – September 2016

Research in quantum foundations studying quantum non-locality from the perspective of causal inference. Discovered new causal compatibility inequalities leading to a better understanding of quantum information resources. Computationally simulated six-entangled qubits and associated measurements to find new entanglement resources. Invented new computational techniques for solving the marginal satisfiability problem capable of out-performing existing methods when large computational networks are required.

Research & Development Data Scientist
Sysomos. Toronto, ON   September 2015 – January 2016

Industry application of varied machine learning methods. Designed algorithms to perform automatic speech recognition on digital video extracted from Twitter. Implemented advanced signal processing techniques to perform acoustic modelling. Worked with a massive parallel computing architecture to process billions of data sources. Designed and built native Android & iOS apps from scratch. Culminated in award winning paper.

Video Game Developer
Lunarch Studios. Waterloo, ON   September 2014 – May 2015

Built an highly-compatible graphics engine that supports dynamic assets loaded asynchronously. Acted as project manager to complete large-scale, internal projects. Developed a highly scalable server platform with integration between multiple software languages. Researched and implemented numerous bin-packing algorithms in order to optimize texture loading performance.

Mathematics Tutor
Humber College. Toronto, ON   January 2014 – May 2014

Tutored thousands of students one-on-one in fields such as statistics, technical math, engineering, biomechanics, and business. Lead an initiative to write and produce high quality educational videos to help students with their studies. Developed a multi-platform, browser-based student sign-in system in order to collect meaningful statistics to improve effectiveness of math centre. Designed and produced graphic art to promote and develop a mathematics community.

Solar Panel Technician
OVG Solar, Inc. Renfrew, ON   June 2011 – August 2011

Industry level experience engineering, assembling and maintaining numerous solar panel arrays. Worked in a team of carpenters, electricians and skilled engineers under flexible hours across all of eastern Ontario.