

Kelly John Rose

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Personal Information

Born on July 13, 1982 in Edmonton, Alberta, Canada.

Canadian citizen, married to an American citizen.

Currently resides in Toronto, Ontario, Canada.

Research Interests

Flow Structure of Economical Systems, Input-Output Analysis, Network Flow Theory, Macroeconomics, Complex Systems Theory, and Computational Complexity

Education

M.Sci. Applied Mathematics, University of Calgary, 2009.

Background courses include: Topology, Cryptanalysis, Elliptic Curve and Galois Field Theory.

B.Math. Combinatorics and Optimization, University of Waterloo, 2005.

Honours with Distinction, Computer Science Minor, Cooperative Degree

Background courses include: Cognitive Modelling, Scheduling Theory, Quantum Information Processing, Coding Theory, Graph Theory, Networking, Digital Electronics, and Software Engineering.

Research Experience

HASKAYNE SCHOOL OF BUSINESS, UNIVERSITY OF CALGARY

Research Assistant, Barrie Nault. September 2008–Current.

Researching the relations between various information theoretic measures and the input-output matrices of the US economy.

Developing and examining the relations of ecological measures such as trophic levels when applied to economic input-output data.

INSTITUTE FOR BIOCOMPLEXITY AND INFORMATICS, UNIVERSITY OF CALGARY

Research Assistant, Stuart Kauffman. Summer 2006–Current.

Investigating relationships between complex ecological flow systems and economic flow systems.

Worked on developing tools to interpret the imagery from the inCell 1000

Presented a variety of papers on mathematical biology and ecology.

Developed a paper demonstrating that dynamical criticality is related to maximum power efficiency for boolean networks with certain properties.

Programmed mean field model simulations using Mircea Andreucut's mean field model for genetic regulatory networks.

INSTITUTE FOR QUANTUM COMPUTING, UNIVERSITY OF WATERLOO

Research Assistant, Software Developer, Raymond Laflamme and Camille Negrevergne.

Winter 2005–Summer 2006.

Developed an optimizing compiler in C++, Bison and Yacc for creating nuclear magnetic resonance pulse programs to do quantum computation.

Implemented a software development environment for the NMR group.

COMMUNICATION SECURITY ESTABLISHMENT, OTTAWA, ON

Mathematician, Summer 2002

Researched on a variety of cryptographic topics for the Canadian government.

Teaching Experience

UNIVERSITY OF CALGARY

Teaching Assistant, Multivariable Calculus for Engineers, Winter 2008.

Teaching Assistant, Calculus for Engineers & Scientists, Fall 2007.

Teaching Assistant, Calculus I, Winter 2007.

Teaching Assistant, Linear Algebra for Science and Engineering, Fall 2006.

UNIVERSITY OF WATERLOO

Teaching Assistant (Marker), Calculus, Linear Algebra, Combinatorics 2001-2005.

Current Projects

Applying ecological modelling, both mathematics and concepts, to US economic data with Stuart Kauffman, and Barrie Nault.

Determining the statistical significance of various phenomenological ecology measures with regards to input-output data from the US economy.

Developing new macroeconomical measures which can provide insight into the changing nature of the US economy from the input-output data.

Working on a variety of economic problems with the complex science group at the Perimeter Institute.

Investigating the correlation between certain information theoretic measures and the percentage change of GDP within the US economy.

Studying the relationship of Boolean Networks with various types of Turing Machines.

"A Category Theoretic approach to Collision-free Hash Functions"

Completed Works

M.Sci. Thesis: "Continuous Models of Genetic Regulatory Networks and the MULTISTABILITY problem."

Published Papers

"Maximum Power Efficiency and Criticality in Random Boolean Networks," with Hilary A. Carteret, Stuart A. Kauffman in *Physics Review Letters* 101 (2008).

Conferences and Workshops Attended

The Economic Crisis and its Implications for The Science of Economics, Perimeter Institute, May 1-4, 2009.

Search and Knowledge Building for Biological Datasets, IPAM, November 26-30, 2007.

Honors & Awards

Alberta Graduate Student Scholarship, 2007.

Dean's List, 2005.

Research Skills

Programming experience in many languages, including: C, C++ , Perl, PHP, RPG/400, Python, Lisp and Fortran.

Database management experience with MySQL, Postgres and MSSQL.

Operating systems experience includes Ubuntu Linux, Windows, Mac, and Unix.

Knowledgeable with most popular research and programming applications including vi, T_EX, L^AT_EX, Subversion (SVN), OpenOffice.org, MS Word, Excel, Adobe Photoshop.

Skilled with Maple from employment at Maplesoft in Winter 2003.

Familiar with distributed computing.

Fluent in English, intermediate skills in French.

Last updated: May 5, 2009

<http://1337hax0r.com/cv.pdf>