John Dykes

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Education

Bachelor of Mathematics, Honours with High Distinction	Carleton University	May. 2014 – Dec. 2017
Master of Mathematics in Pure Mathematics	University of Waterloo	Jan. 2018 – Dec. 2018

Employment Experience

Canadian Centre for Cyber Security — Sept. 2020 – Present
Cryptanalyst

- Researching and implementing cryptographic algorithms in order to ensure cryptographic primitives used to protect Government of Canada communications continue to be effective in light of anticipated quantum computing advancements
- Worked on a team responsible for maintaining recommendations on the use of various cryptographic algorithms within the Government of Canada

Communications Research Centre Canada — Nov. 2019 – Sept. 2020
Computer Research Programmer

- Worked on a team applying machine learning and Geocomputation to telecommunications data, including estimating the interference that cellular towers have on each other
- Attended a 1-week long training course on machine learning using Tensorflow

University of Waterloo — Jan. 2018 – Dec. 2018
Teaching Assistant

- Marked assignments for undergraduate math classes
- Held office hours to answer student questions

Carleton University — Sept. 2017 – Dec. 2017
Teaching Assistant

- Marked assignments for undergraduate math classes
- Held office hours to answer student questions
- Teaching tutorials for math courses

Research Experience

Canadian Centre for Cyber Security — Sept. 2020 – Present

- Classified research on cryptographic algorithms, in particular those algorithms which are meant to be effective against an adversary with access to a quantum computer.

University of Waterloo — May 2018 – Dec. 2018

Research Project for Master's Degree

- Worked with Dr. Yu-Ru Liu from the University of Waterloo
- Studied Waring's problem in Number Theory, in particular using Vinogradov's Mean Value Theorem

Carleton University — May 2017 – Aug. 2017

Honours Project for Bachelor's Degree

- Worked with Dr. Brett Stevens from Carleton University
- Studied so called "well formed scales" in mathematical music theory
- Used Python to create a program which found counterexamples to a conjecture by Marek Zabka concerning these well formed scales

Carleton University — May 2015 – Aug. 2015

Dean Summer Research Internship

- Worked with Dr. Yuly Billig from Carleton University
- Investigated a series of particle physics papers written by Nima Arkani-Hamed and Jaroslav Trnka with the goal of better understanding the mathematics involved
- Used Python to create a mathematical model of convex n-gons in m-dimensional space which exhibited a, desired property related to the research with Dr. Billig

Awards and Honours

- Carleton University Dean's Honour List student 2015-2018
- Carleton University Claude Bissel Scholarship 2015
- Carleton University A. Davidson Dunton Scholarship 2016, 2017
- Senate Medal for Outstanding Academic Acheivement 2018

Computer Skills

- Strong knowledge of Mathematica, SageMath, C, Python, Matlab, R
- Comfortable working in Unix/Linux environment
- Ability to type at 150 words per minute

Other Achievements

- Completed Grade 10 piano performance examination
- Competed in the 2014 Ottawa Kiwanis Music Festival: Grade 10 Piano Division
  - Second place in the Post-Romantic and Early Twentieth Century Repertoire section
  - Third place in the Romantic Repertoire section
- Competed in the Canadian University Chess Championship, 2014
- Canadian Chess Federation rating: 2000