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

Crypt-analyst

- 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 Geo-computation 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

Programming Skills

- Proficient in the following programming languages: Python, C, C#, JavaScript, Typescript, Mathematica, SageMath.

- Strong knowledge of front-end web development stack including experience using: HTML, CSS, tailwind CSS, React, Next.js.

- Strong knowlege of back end web development tools including experience using: Express.js, Socket.io, docker, NGINX, Google Cloud APIs, AWS, Digital Ocean.

- Very strong knowledge of cryptography and network security, including: Cryptographically secure hash functions, block ciphers, digital signatures, post quantum cryptography, HTTPS.

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

Other Achievements

- Achieved the highest level on the TOPIK (Test of Proficiency in Korean) exam administered by the South Korean Ministry of Education.

- Completed Grade 10 piano performance examination

- Competed in the Canadian University Chess Championship, 2014

- Canadian Chess Federation rating: 2000