

Justin Xu

📞 647-918-7099

✉️ justin.xu@uwaterloo.ca

🌐 [xujustinj](https://www.linkedin.com/in/xujustinj)

EDUCATION

- Sep 2023 – present **Computer Science, Master of Mathematics**, Thesis Program
University of Waterloo, David R. Cheriton School of Computer Science | Waterloo, ON
- Supervised by Professor Pascal Poupart
 - Continuing knowledge graph research from Jun-Aug 2023 research assistantship
 - 93.50% cumulative GPA
- Sep 2018 – Apr 2023 **Bachelor of Computer Science**, Honours, Co-operative Program
University of Waterloo, David R. Cheriton School of Computer Science | Waterloo, ON
- Artificial Intelligence Specialization
 - Statistics Minor
 - 94.75% cumulative GPA (Dean's Honours)

RESEARCH EXPERIENCE

- Jun 2023 – Aug 2023 **Research Assistant**
University of Waterloo, David R. Cheriton School of Computer Science | Waterloo, ON
- Supervised by Professor Pascal Poupart
 - Conducted a thorough literature review on the text-to-graph task within natural language processing, including knowledge graph embeddings, contrastive techniques, and data augmentation
 - Developed a family of data augmentation methods to improve translation between text and knowledge graphs
- Sep 2022 – Dec 2022 **Research Intern**
Waabi | Toronto, ON
- Supervised by Professor Raquel Urtasun
 - Experimented with black-box optimization to demonstrate a novel traffic behaviour model's ability to generate realistic adversarial scenarios in self-driving simulations
 - Ideated and presented future research directions for addressing the realism-controllability trade-off in the generation of adversarial examples
 - Implemented a Bayesian optimization module for a custom Python optimization tool

PROFESSIONAL EXPERIENCE

- May 2022 – Aug 2022 **Software Development Engineer Intern**
Amazon | Vancouver, BC
- Created a web application that generates distributed trace trees for customer payments
 - Designed a typed functional programming language for configuring the application
- Sep 2021 – Dec 2021 **Software Developer Intern**
Alloy | Vancouver, BC
- Implemented a graph algorithm to perform record matching in a product database

Jan 2021 – **Solutions Developer**Apr 2021 FairVentures Lab | Kitchener, ON (*remote*)

- Combined object detection and word embedding models to quickly prototype a tool that can answer questions about images of a business
- Designed a collation algorithm for text extracted from tables in scanned documents
- Researched and wrote a report comparing evaluation metrics for text extractions

May 2020 – **Full Stack Software Engineer Intern**Aug 2020 Wish | Toronto, ON (*remote*)

- Conducted an A/B test on improvements to the product approval process
- Prototyped a Pylint checker to suggest efficiency improvements on PyMongo queries

May 2019 – **Mobile Software Developer**Aug 2019 Osellus (*now Leap9*) | Toronto, ON

- Profiled and compared performance of record data structure implementations in Swift

VOLUNTEER EXPERIENCEJan 2019 – **Writer**

present mathNEWS | Waterloo, ON

- Wrote a series of educational articles on important mathematical constants for an undergraduate mathematics audience

Sep 2020 – **Backend Team Lead**Aug 2021 Loo Labs | Waterloo, ON (*remote*)

- Provided technical guidance to 4 first-year and high school student developers, with emphasis on architecture, documentation, code quality, and maintainability

REFEREED PUBLICATIONS

2023 **Simon Suo, Kelvin Wong, Justin Xu, James Tu, Alexander Cui, Sergio Casas, and Raquel Urtasun.** MixSim: A Hierarchical Framework for Mixed Reality Traffic Simulation
Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023,
 pp. 9622-9631

SELECTED AWARDS2018 – **9× Term Distinction / Term Dean's Honours List**2023

- for achieving a term average above 80%

2019 **University of Waterloo President's Scholarship of Distinction** (\$2000)

- for University of Waterloo students with an admission average of 95%

2019 **University of Waterloo Faculty of Mathematics Scholarship** (\$8000)

- for exceptional high school grades and performance on math contents

2019 **University of Waterloo Faculty of Mathematics Promissory Scholarship** (\$1000)

- for the top 50 grade 11 students on Euclid Mathematics Contest (2017)