

# HARRIS CHAN

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## RESEARCH INTERESTS

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Reinforcement learning with natural language and computer vision, generative models for graphs and discrete objects, optimization and generalization for deep neural networks

## EDUCATION

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### University of Toronto

*Doctor of Philosophy, Computer Science*

January 2019 - present

Supervisor: Prof. Jimmy Ba and Prof. Sanja Fidler

*Master of Science, Computer Science*

September 2017 - January 2019

Supervisor: Prof. Jimmy Ba and Prof. Sanja Fidler

CGPA: A+

*Bachelor of Applied Science in Engineering Science (ECE Option)*

September 2011 - June 2016

Thesis Supervisor: Prof. Deepa Kundur

CGPA: 3.92

## PUBLICATIONS

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### Preprint or Submission

1. **Harris Chan\***, Yuhuai Wu\*, Jamie Kiros, Jimmy Ba. [ACTRCE: Augmenting Experience via Teacher's Advice For Multi-Goal Reinforcement Learning](#). *arXiv preprint arXiv:1902.04546*, 2019.

### Peer-reviewed papers

1. **Harris Chan**, Jamie Kiros, William Chan. [Multichannel Generative Language Models](#). In *Findings of Empirical Methods in Natural Language Processing (EMNLP)* 2020. (To appear)
2. Silviu Pitis\*, **Harris Chan\***, Stephen Zhao, Bradly Stadie, Jimmy Ba. [Maximum Entropy Gain Exploration for Long Horizon Multi-goal Reinforcement Learning](#). In *International Conference on Machine Learning (ICML)* 2020.
3. Silviu Pitis\*, **Harris Chan\***, Kiarash Jamali, Jimmy Ba. [An Inductive Bias for Distances: Neural Nets that Respect the Triangle Inequality](#). In *International Conference on Learning Representations (ICLR)* 2020.
4. Yeming Wen\*, Kevin Luk\*, Maxime Gazeau\*, Guodong Zhang, **Harris Chan**, Jimmy Ba. [Interplay Between Optimization and Generalization of Stochastic Gradient Descent with Covariance Noise](#). In *International Conference on Artificial Intelligence and Statistics (AISTATS)* 2020.

### Workshops

1. Silviu Pitis\*, **Harris Chan\***, Stephen Zhao, Bradly Stadie, Jimmy Ba. [Maximum Entropy Gain Exploration for Long Horizon Multi-goal Reinforcement Learning](#). In *Adaptive and Learning Agents Workshop*. Workshop held at International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2020. (**Oral, Best Paper Award**)
2. **Harris Chan**, Jamie Kiros, William Chan. [Multilingual KERMIT: It's Not Easy Being Generative](#). In *Perception as generative reasoning Workshop*. Workshop held at Neural Information Processing Systems (NeurIPS), 2019. And in *3rd Workshop on Neural Machine Translation and Generation (WNMT)*. Workshop held at EMNLP-IJCNLP, 2019.
3. Chia-Cheng Liu\*, **Harris Chan\***, Kevin Luk. [Auto-regressive Graph Generation Modeling with Improved Evaluation Methods](#). In *Graph Representation Learning Workshop*. Workshop held at Neural Information Processing Systems (NeurIPS), 2019.

4. Silviu Pitis\*, **Harris Chan\***, Jimmy Ba. [ProtoGE: Prototype Goal Encodings for Multi-goal Reinforcement Learning](#). In *4th Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, 2019.
5. Yuhuai Wu, **Harris Chan**, Sanja Fidler and Jimmy Ba. ACTRCE: Augmenting Experience via Teachers' Advice. In *1st Workshop on Goal Specifications for Reinforcement Learning*. Workshop held jointly at ICML, IJCAI, AAMAS 2018. (Oral)
6. **Harris Chan**, Eman Hammad, Deepa Kundur. [Investigating the impact of intrusion detection system performance on communication latency and power system stability](#). In *Proceedings of the Workshop on Communications, Computation and Control for Resilient Smart Energy Systems*, 2016.

## RESEARCH EXPERIENCE

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### Research Intern

June 2020 - October 2020

*Google Brain*

Supervisor: Delesley Hutchins

- Research topic: Deep Structured Model for Program Understanding

### Research Intern

June 2019 - September 2019

*Google Brain Toronto*

Supervisor: William Chan

- Research topic: Multichannel Generative Language Models

### Research Intern

January 2019 - May 2019

*Borealis AI*

Supervisor: Kevin Luk

- Research topic: Auto-regressive Graph Generation Modeling with Improved Evaluation Methods

### Undergraduate Thesis Student

September 2015 - April 2016

*University of Toronto*

Supervisor: Prof. Deepa Kundur

- Research topic: Investigating the impact of intrusion detection system performance on communication latency and power system stability

### Research Student

May 2012 - August 2012

*Condensed Matter Physics, University of Toronto*

Supervisor: Prof. Young-June Kim

- Research topic: 3-Omega method for measuring thermal conductivity for thermoelectric materials

## PROFESSIONAL EXPERIENCE

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### SoC Design Engineer

August 2016 - September 2017

*Intel Programmable Solutions Group, Toronto, Canada*

- Usability Tools Team in the OpenCL Group for Intel FPGA

### Co-founder and developer

May 2016 - September 2017

*Curovate, Entrepreneurship Hatchery, University of Toronto*

- Worked with a team of a physiotherapist and three other Engineering Science students to develop an Android application for post ACL surgery/injury rehabilitation, as well as creating a business and marketing plans.

### Engineering Intern, Video Processing Group

May 2014 - September 2015

*Qualcomm Canada, Markham, Canada*

- Designed and performed image and video quality assessment for Display Stream Compression (DSC) technology

- Created a Kivy application for subjective image quality trials according to proposed standard ISO/IEC DIS 29170-2 for testing nearly lossless coding, and conducted the experiment to verify results from Samsung
- Modelled in C the pipeline of video post processing algorithms, for use with hardware design verification

### **Co-founder and developer**

May 2013 - September 2013

*Nanomaps, Entrepreneurship Hatchery, University of Toronto*

- Worked with a team of two other Engineering Science students to develop a proof of concept interactive indoor map of commercial areas on Android, with extension to mobile navigation system for the blind
- Searched and contacted relevant stakeholders such as retail storeowners and marketing director of the mall, and conducted surveys among venue visitors

## **TEACHING EXPERIENCE**

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### **Teaching Assistant**

September 2017 - Present

*University of Toronto*

- CSC413 Neural Networks and Deep Learning, Winter 2020
- CSC311 Introduction to Machine Learning, Fall 2019/2020
- ECE421 Introduction to Machine Learning, Winter 2019
- MIE324 Introduction to Machine Intelligence, Summer & Fall 2018. Developed 3 new assignments over the summer
- CSC321 Introduction to Neural Networks, Winter 2018
- CSC411 Introduction to Machine Learning, Fall 2017

## **HONOURS & AWARDS**

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MITACS Accelerate (in collaboration with Borealis AI)	2019
NSERC Canada Graduate Scholarship (CGS-M), University of Toronto (Accepted)	2018
NSERC Canada Graduate Scholarship (CGS-M), University of Toronto (courteously Declined)	2016
Engineering Science Award of Excellence, University of Toronto	2016
Dean's List for all semesters, University of Toronto	2011-2016
Herbert Gladish Memorial Award, University of Toronto	2013
Walberg Memorial Award, University of Toronto	2012
Engineering Science Research Opportunities Program (ESROP) Fellowship, University of Toronto	May 2012
Engineering Entrance Scholarships, University of Toronto	2011
Queen Elizabeth II Aiming for the Top, University of Toronto	2011 - 2016

## **PROFESSIONAL SERVICES**

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### **Conference Reviewer**

- International Conference on Learning Representations (ICLR) 2020
- Conference on Neural Information Processing Systems (NeurIPS) 2019-2020
- International Conference on Machine Learning (ICML) 2019-2020

## **EXTRACURRICULAR ACTIVITIES**

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### **Co-Vice President Youth Engagement**

June 2013 - April 2014

*Engineers Without Borders (EWB), University of Toronto Chapter*

- Coordinated 3 programs which aim to empower youth in social change: School Outreach (SO), Youth Development program (YD), Social Change and Youth Leadership Conference (SCYLC)

**Co-Subcommittee Chair**

May 2013 - September 2013

*Engineering Frosh Week Charity Buskerfest Event, University of Toronto*

- Organized a buskerfest performed by first year engineering students to raise awareness and money for the Princess Margaret Cancer Foundation, resulting in \$5979.25 donated to the charity