

SICONG (SHELDON) HUANG

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EDUCATION

University of Toronto PhD in Computer Science Advised by Prof. Roger Grosse and Prof. Jimmy Ba cGPA: 4.00/4.00	09/2020 -
University of Toronto Honours Bachelor of Science in Computer Science, Statistics and Mathematics. Victoria College, Faculty of Arts & Science Advised by Prof. Roger Grosse, Prof. Alireza Makhzani and Prof. Sageev Oore cGPA: 3.92/4.00	09/2019 - 06/2020 09/2017 - 05/2018
Massachusetts Institute of Technology Visiting Student at CSAIL and BCS Advised by Prof. Josh Tenenbaum and Prof. Jiajun Wu	06/2019- 08/2019
University of Toronto Bachelor of Applied Science in Engineering Science Faculty of Applied Science & Engineering cGPA: 3.90/4.00 (Transferred to the Faculty of Arts & Science after Year 2)	09/2015 - 08/2017
Tsinghua University High School (清华附中) Honor Science Class (理科实验班) Merit Student. Awarded to top 5%. (三好学生)	09/2012 - 06/2015

PROFESSIONAL EXPERIENCE

Borealis AI Machine Learning Research Intern (Part time).	05/2021 - 08/2022
St. Michael's Hospital Research Student.	02/2021 - 09/2021
Vector Institute, University of Toronto Research Intern. Advisors: Prof. Frank Rudzicz and Prof. Marzyeh Ghassemi	07/2020 - 09/2020
Vector Institute, University of Toronto Research Intern (Part time). Supervisor: Prof. Roger Grosse	05/2018 - 05/2019
Borealis AI (RBC Institute for Research) Research Intern (Part time). Manager: Dr. Yanshuai Cao	01/2018 - 05/2019
Vector Institute, University of Toronto Student Researcher(Part time). Supervisor: Prof. Roger Grosse	09/2017 - 04/2018

Department of Computer Science, University of Toronto

04/2017 - 08/2017

Summer Research Assistant

Supervisor: Prof. Roger Grosse

Ultrafast Photonics Lab, University of Toronto

04/2016 - 08/2016

Summer Research Assistant

Supervisor: Prof. Li Qian

PUBLICATIONS

- Rob Brekelmans*, **Sicong Huang***, Marzyeh Ghassemi, Greg Ver Steeg, Roger Baker Grosse, and Alireza Makhzani. Improving mutual information estimation with annealed and energy-based bounds. In *International Conference on Learning Representations*, 2022
- **Sicong Huang***, Alireza Makhzani*, Yanshuai Cao, and Roger Grosse. Evaluating lossy compression rates of deep generative models. In *International Conference on Machine Learning*. 2020
- Bryan M. Li, Alexander Cowen-Rivers, Piotr Kozakowski, David Tao, Siddhartha Rao Kamalakara, Nitarshan Rajkumar, Hariharan Sezhiyan, **Sicong Huang**, and Aidan N. Gomez. Generic reinforcement learning codebase in tensorflow. In *The Journal of Open Source Software*, 2019
- **Sicong Huang**, Qiyang Li, Cem Anil, Xuchan Bao, Sageev Oore, and Roger B. Grosse. Timbretron: A wavenet(cycleGAN(CQT(audio))) pipeline for musical timbre transfer. In *International Conference on Learning Representations*, 2019
- Aidan N. Gomez, **Sicong Huang**, Ivan Zhang, Bryan M. Li, Muhammad Osama, and Lukasz Kaiser. Unsupervised cipher cracking using discrete GANs. In *International Conference on Learning Representations*, 2018
- Yi Liu, **Sicong Huang**, and Li Qian. Stable polarization-dependent self pulsing in a brillouin amplified spun fiber. In *Specialty Optical Fibers*, pages SoW1H-6. Optical Society of America, 2016
- **Sicong Huang***, Yuancong Xu*, Xinghua Yan, Ying Shang, Pengyu Zhu, Wenying Tian, and Wentao Xu. Development and application of a quantitative loop-mediated isothermal amplification method for detecting genetically modified maize mon863. volume 95, pages 253-259. *Journal of the Science of Food and Agriculture*, 2015

TEACHING

Department of Computer Science, University of Toronto

TA, Communication for Computer Scientists | CSC2701

01/2023 - 05/2023

Mentor/TA, PRISM Program

01/2023 - 05/2023

Mentor/TA, PRISM Program

01/2022 - 05/2022

TA, Introduction to Machine Learning | CSC311

09/2021 - 12/2021

Mentor/TA, PRISM Program

01/2021 - 05/2021

Head TA, Introduction to Machine Learning | CSC2515

09/2020 - 12/2020

Prep TA, Introduction to Machine Learning | CSC2515

06/2020 - 08/2020

Department of Mathematics, University of Toronto

TA, Linear Algebra II | MAT224

01/2020 - 04/2020

*Equal Contribution

TA, Linear Algebra I | MAT223
TA, Calculus I | MAT135

09/2017 - 12/2017
05/2017 - 08/ 2017

PROFESSIONAL SERVICE

Reviewer, Transactions on Machine Learning Research (TMLR) 2022
Reviewer, International Conference on Machine Learning (ICML) 2021, 2022, 2023
Reviewer, International Conference on Learning Representations (ICLR) 2021, 2022, 2023
Reviewer, Neural Information Processing Systems (NeurIPS) 2020, 2021, 2022

LEADERSHIP

FOR.ai

Co-Founder and Researcher 06/2017 - 06/2022

- Co-founded an independent, international, distributed deep learning research group with Aidan Gomez, Ivan Zhang, and Byran Li.
- Helped reviewing applications (technical challenge submissions) and interviewing candidates.
- Participated in research projects, including CipherGAN and computational primitive and a research codebase for RL.
- Acquired by Cohere as Cohere For AI in 2022 June.

UTMIST(University of Toronto Machine Intelligence Student Team)

Advisor 09/2018 - Present
President 10/2016 - 08/2018
Co-Founder 10/2016 - Present

- Set up the vision, mission, name, and the executive team.
- Leading the team to organize a total of 16 events in 2017 academic year including a 10-hour minicourse (MIST101), machine learning industry & academic guest speaker series and more.
- Grown to over 700 members in the second year. Now a vibrant community with 1000+ members.

Chestnut Residence Council, University of Toronto

VP Communications 09/2015 - 05/2016

MENTORSHIP

Department of Computer Science, University of Toronto

Mentor, Graduate Application Assistance Program 2021
Mentor, The Alumni-Student Mentorship Program 2021, 2022, 2023

Division of Engineering Science, University of Toronto

Mentor, Nsight - Engineering Science Mentorship Program 2022

Department of Statistics, University of Toronto

Mentor, Statistical Sciences Mentorship program 2021, 2022, 2023

FAVORITE COURSEWORK

Graduate-Level Courses

Advanced Topics in Social Psychology II
Motivational Theories in Social Psychology | PSY5431 by Jason Plaks In Progress
Advanced Topics in Social Psychology III
Philosophy of Psychology as a Social Science | PSY5432 by Romin Tafarodi In Progress
Behavioural Economics (PhD) | PSY5432 by Yoram Halevy Fall 2022

Algorithms for Collective Decision Making CSC2556 by Nisarg Shah	Winter 2022
Ethics of AI ETH1000 by Markus Dubber et al.	Fall-Winter 2022
Deep Learning: Theory & Data Science MAT1510 by Vardan Papyan	Winter 2020
Neural Net Training Dynamics CSC2541 by Roger Grosse	Winter 2020
Information Visualization CSC2537 by Fanny Chevalier	Fall 2020
Neuroscience Distinguished Lecture Series (Doctoral) NEU2000	Fall-Winter 2021
Stochastic Processes STA447/2006 by Jeffrey Rosenthal	Winter 2020
Methods of Data Analysis I STA302/1001 by Katherine Daignault	Winter 2020
Mathematical Statistics I STA452/2112 by David Brenner	Fall 2019
Information Theory ECE1502 by Wei Yu	Fall 2019
Statistical Methods for ML II STA414/2104 by David Duvenaud & Murat Erdogdu	Winter 2019
Machine Learning and Data Mining CSC411/2515 by Michael Guerzhoy	Winter 2017

Cognitive Science Related

Cognitive Neuroscience PSY493 by Meg Schlichting	Winter 2020
Learning and Plasticity PSY260 by Laura Corbit	Fall 2019
Introduction to Cognitive Science COG250 by John Vervaeke	(Year Course) Fall-Winter 2018

Audited, not for credit

	Audit time
Current Topics in Consumer Behavior RSM3054 by Pankaj Aggarwal	In Progress
Positive Psychology I @ Coursera x University of Pennsylvania by Martin E.P. Seligman	Winter 2023
Principles of Microeconomics 14.01 @ MIT by Jonathan Gruber	Fall 2022
Psychology and Economics 14.13 @ MIT by Frank Schilbach	Summer 2022
Moral Foundations of Politics PLSC118 @ Yale by Ian Shapiro	Summer 2022
Transformers United CS25 @ Stanford Seminar	Summer 2022
Natural Language Understanding CS224U @ Stanford by Christopher Potts et al.	Summer 2022
Buddhist Psychology BPM232 @ UToronto by Anderson Todd	Summer 2022
NLP with Deep Learning CS224N @ Stanford by Chris Manning et al.	Winter 2022
Intro to Self-Determination Theory @ URochester by Richard Ryan	Winter 2022
Personality and Its Transformations PSY230 @ UToronto by Jordan Peterson	Fall 2021
Deep Reinforcement Learning CS294-112 @ UC Berkeley by Sergey Levine et al.	Summer 2019
Deep Unsupervised Learning CS294-158 @ UC Berkeley by Pieter Abbeel et al.	Summer 2019

COMPETITIONS, SCHOLARSHIPS & AWARDS

- Vector Institute Research Grant
Vector Institute for Artificial Intelligence 2020, 2021, 2022
- The Dr Lorus J Milne and Dr Margery J Milne Award
University of Toronto 05/2019
- Dean's Experience Enhancement Fund
University of Toronto 02/2019
- Konrad Group Digital Technology Scholarship
University of Toronto & Konrad Group 11/2018
- The Professor William Kingston and Dr John Kingston Scholarship
University of Toronto 10/2018
- ICLR Travel Award
International Conference on Learning Representations(ICLR) 05/2018 and 05/2019

- 1st Place in Microsoft College Code Competition 09/2017
Microsoft
- Dean's List 2015-2020
University of Toronto

TECHNICAL SKILLS

Programming	Python, Java, HTML, Matlab, C, Assembly, Verilog, Shell
Machine Learning	Pytorch, Tensorflow, Jax, Numpy, Scipy
Presentation	L ^A T _E X, PowerPoint
Software Documentation	Markdown, RST, Sphinx
Data Processing & Visualization	R, Matplotlib, Excel, Origin8, Capstone
Audio Processing	Audacity

INVITED TALKS AND POSTER PRESENTATIONS

- **ICLR2022, Online** 04/2022
Improving Mutual Information Estimation using Annealed and Energy-Based Bounds [Poster]
- **ICML2020, Online** 07/2020
Evaluating Lossy Compression Rates of Deep Generative Models [Poster]
- **NeurIPS Workshop on Bayesian Deep Learning 2019, Vancouver** 12/2019
Evaluating Lossy Compression Rates of Deep Generative Models [Oral and Poster]
- **Toronto Machine Learning Annual Conference, Toronto** 11/2019
TimbreTron [Poster]
- **Toronto Journal Club, Google Brain, Toronto.** 11/2019
Evaluating Lossy Compression Rates of Deep Generative Models [Oral]
- **Evolution of Deep Learning Symposium, Vector Institute** 11/2019
Evaluating Lossy Compression Rates of Deep Generative Models [Poster]
- **AI Squared Research Talk, University of Toronto** 09/2019
TimbreTron [Oral]
- **SIAM Talks, MIT** 06/2019
TimbreTron [Oral]
- **GANocracy Workshop, MIT** 05/2019
TimbreTron [Poster]
- **ICLR2019, New Orleans** 05/2019
TimbreTron [Poster]
- **Paper Reading Group, Borealis AI** 04/2019
Exploration Strategies in RL [Oral]
- **UTMIST Paper Reading Group, University of Toronto** 04/2019
Exploration Strategies in RL [Oral]
- **Victoria College Research Day, University of Toronto** 04/2019
TimbreTron [Poster]
- **Vector Research Symposium, University of Toronto** 02/2019
TimbreTron [Poster]

- **Paper Reading Group, Borealis AI** 12/2018
TimbreTron [Oral]
- **NeurIPS2019 ML for Creativity and Design Workshop, Montreal** 12/2018
TimbreTron [Oral]
- **Machine Intelligence Conference, MIT** 11/2018
TimbreTron [Oral]
- **ICLR2018, Vancouver** 05/2018
Unsupervised Cipher Cracking Using Discrete GANs [Poster]
- **UGSRP Talk Series, Dept. of CS, University of Toronto** 08/2017
Musical Style Transfer [Oral]
- **UNERD Talk Series, University of Toronto** 08/2016
Stable Polarization-Dependent Self Pulsing in a Brillouin Amplified Spun Fiber [Oral]

PRE-COLLEGE RESEARCH EXPERIENCE

Shing-Tung Yau High School Mathematics Award 11/2013 - 11/2014

Yau Mathematical Sciences Center, Tsinghua University

Advisor: Dr. Wenbing Xu, Tsinghua University High School

Researched real analysis and wrote and defended my thesis on: *Study on the Relative Periodicity and the Long-term Behavior of Hypocycloid and Quasicycloid*. The committee members: Prof. Shing-Tung Yau, Prof. Melissa Franklin, et al.

Summer Research Student 06/2012 - 10/2013

Advisor: Dr. Wentao Xu, Laboratory of Food Safety, China Agricultural University

Self-taught relevant molecular biology, received relevant research training and worked on: *Development and application of a quantitative loopmediated isothermal amplification method for detecting genetically modified maize MON863*