Chenghui Zhou

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Profile

I am a PhD student researching artificial intelligence and machine learning. My current focus is on generative models – their theoretical foundations and applications in structured data generation, such as program synthesis, molecule generation, image captioning, text generation, and machine translation.

Education

Doctor of Philosophy, Candidate — August 2016 – December 2023 (Expected)
Carnegie Mellon University
Machine Learning
Related Coursework: Deep Reinforcement Learning, Probabilistic Graphical Model, Intermediate Statistics, Statistical Machine Learning, Convex Optimization
Advisor: Barnabás Póczos

Master of Science – Carnegie Mellon University — August 2016 – December 2018
Machine Learning
Advisor: Manuela Veloso, Barnabás Póczos

Bachelor of Science – McGill University — September 2012 – May 2016
Honours Computer Science & Minor Statistics
Advisor: Joelle Pineau

Research & Work Experience

Applied Scientist Intern — May 2020 – August 2020
CodeGuru team, Amazon Web Service, Inc.

- Designed machine learning algorithms for effective search in code repositories.

Research Intern — May 2018 – August 2018
Predictive Algorithm team, Zoll LifeVest

- Designed machine learning algorithms to classify cardiac rhythms in ECG segments.

Undergraduate Research Assistant — May 2014 – August 2015
Reasoning and Learning Lab, McGill University

- Developed algorithms to improve predictions for pedestrian tracking in robotics.
- Used method of moments and least squares to learn predictive linear Gaussian models.
- Evaluated algorithms on synthetic and real data of human walking trajectories.

Publications & Working Papers

- Chenghui Zhou, Barnabás Póczos
  Improving Molecule Properties Through 2-Stage VAE
  Machine Learning for Structural Biology Workshop, NeurIPS, 2022.

- Chenghui Zhou*, Frederic Koehler*, Viraj Mehta*, Andrej Risteski
  Variational Autoencoders in the Presence of Low-Dimensional Data: Landscape and Implicit Bias
  International Conference on Learning Representations (ICLR), 2022.

- Chenghui Zhou, Chun-Liang Li, Barnabás Póczos
  Unsupervised Program Synthesis for Images by Sampling without Replacement
  Conference on Uncertainty in Artificial Inteligence (UAI), 2021.

Chenghui Zhou, chenghuz@cs.cmu.edu

- Chenghui Zhou, Chun-Liang Li, Barnabás Póczos
  Unsupervised Program Synthesis for Images Using Tree-Structured LSTM
  Deep Reinforcement Learning Workshop & Learning with Rich Experience Workshop (one of two selected oral presentations) *NeurIPS*, 2019.

- Robin Schmucker, Chenghui Zhou, Manuela Veloso
  Multimodal Movement Activity Recognition Using a Robot's Proprioceptive Sensors
  RoboCup Symposium, 2018.

- Chenghui Zhou, Manuela Veloso
  Interception in Continuous Space Using Deep Reinforcement Learning
  Submitted to *International Conference on Robotics and Automation (ICRA)*, 2018.

- Michiel de Jong, Kevin Zhang, Travers Rhodes, Aaron Roth, Robin Schmucker, Chenghui Zhou, Sofia Ferreira, João Cartucho, Manuela Veloso
  Towards a Robust Interactive and Learning Social Robot
  International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2018.

- Chenghui Zhou, Borja Balle, Joelle Pineau
  Learning Time Series Models for Pedestrian Motion Prediction
  International Conference on Robotics and Automation (ICRA), 2016.

Teaching

2021	Teaching assistant for **Convex Optimization** (Carnegie Mellon University)
2018	Teaching assistant for **Statistical Machine Learning** (Carnegie Mellon University)
2016	Teaching assistant for **Introduction to Software Systems** (McGill University)
2015	Teaching assistant for **Foundations of Programming** (McGill University)

Community Service

2022	Served as a mentor in the **PhD Peers Program** of Machine Learning Department
2019	Served on the **Retreat Committee** of Machine Learning Department
2018 – 2020	Served as **SCS4ALL Representative** for Machine Learning Department

Computer Skills

Languages	Python, Java, C, Matlab, LaTeX
Operating systems	Linux, Windows, OS X
Other	PyTorch, Keras, JAX, Tensorflow, Sklearn

Languages

Chinese	Native speaker
English	Fluent
French	Basic

Scholarships & Awards

2013 – 2016	**Dean's Honours List** – McGill University Faculty of Science
2015	**Science Undergraduate Research Award** – McGill University
2015	**Emily Ross Crawford Scholarship** – McGill University
2014	**Scholarship for BSc Computer Science Honours Student** – Le Réseau ACTION TI
2013	**Faculty of Science Scholarship** – McGill University
2012	**Descartes National Scholarship** – Waterloo University (declined)
2012	**Hugh Brock Scholarship** – McGill University
2010	**Gold Medal in Canadian Open Mathematics Challenge**