

Chuqin Geng

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Research interests

Theoretical foundations and applications of deep learning; Neuro-symbolic reasoning; Robustness, verification and fairness of deep learning.

Education

McGill University

Montreal, QC, CA

PhD in Computer Science

Sep 2021 – Present

Advisor: Prof. Xujie Si, GPA: 4.0/4.0

Georgia Institute of Technology

Atlanta, GA, USA

MSc in Computer Science, GPA: 4.0/4.0

Sep 2019 – Apr 2021

University of Reading

Reading, Berkshire, UK

MSc in Finance, GPA: 4.0/4.0

Sep 2016 – Dec 2017

University of Toronto

Toronto, ON, CA

Honours BSc in Math and Statistics

Sep 2021 – Aug 2015

Selected awards

Computer Science Top-up Award (McGill University) 2023

Grad Excellence Award (McGill University) 2021-2023

Academic Distinction Award (University of Reading) 2017

Second prize in mathematics competition (Shaanxi province, China) 2009

Publications

Towards Reliable Neural Specifications

Chuqin Geng, Nham Le, Xiaojie Xu, Zhaoyue Wang, Arie Gurfinkel, Xujie Si
accepted to ICML 2023 (Oral) (with 3% accept rate)

Identifying Different Student Clusters in Functional Programming Assignments: From Quick Learners to Struggling Students

Chuqin Geng, Wenwen Xu, Yingjie Xu, Brigitte Pientka, Xujie Si
accepted to SIGCSE 2023 TS

Novice Type Error Diagnosis with Natural Language Models

Chuqin Geng, Haolin Ye, Yixuan Li, Tianyu Han, Brigitte Pientka, Xujie Si
accepted to APLAS 2022

Scalar Invariant Networks with Zero Bias

Chuqin Geng, Xiaojie Xu, Haolin Ye, Xujie Si
submitted to NeurIPS 2023

Towards Robust Saliency Maps

Nham Le, Chuqin Geng, Arie Gurfinkel, Xujie Si

submitted to NeurIPS 2023

Can ChatGPT Pass An Introductory Level Functional Language Programming Course?

Chuqin Geng, Yihan Zhang, Brigitte Pientka, Xujie Si

submitted to Onward! Papers 2023

Research experience

Explore the synergy of symbolic reasoning with deep learning

Advisor: Prof. Xujie Si (McGill University)

Sep 2021 – Present

Proposed new specifications for neural network verification. Explored novel methods to improve models' robustness and fairness. Focused on enhancing deep learning performance through optimization and representation theory.

Disproof of a conjecture in biometric security optimization

Mentors: Prof. Steven Rayan (University of Toronto)

Jan 2015 – Aug 2015

Disproved a conjecture regarding solutions for an optimization problem that models biometric systems' privacy/security trade-off.

Teaching experience

Head teaching assistant, McGill University

Winter 2022

COMP 302: Programming Languages and Paradigms

Conducted weekly office hours and tutorials, designed and graded exams, developed auto-graders for assignments, implemented mutation testing, and utilized Moss for plagiarism detection.

Industry experience

FITFI Inc.

Toronto, CA

Senior Data Scientist

Jan 2018 – Sep 2019

Invented the patent "System and method for automatically detecting and monitoring use of exercise equipment". Led algorithm team, secured demo opportunity at 2019 Collision Conference, and helped raise over 2 million CAD funding.

SHAREWIN SOFTWARE

Beijing, China

Algorithm Engineer

Sep 2015 – Sep 2016

Designed fault extraction algorithm with preprocessing, filtering, and ant tracking for accurate fault surface detection in 3D-seismic volumes.

Talks

A study on student performance clusters

Mar 2023

SIGCSE 2023, SPLICE Workshop

Novice Type Error Diagnosis with Natural Language Models

Dec 2022

APLAS 2022

Automatic code generation using large language models

Sep 2022

PhD Comprehensive Exam

Service

SIGCSE 2023, ICCV 2023, NeurIPS 2023 Reviewer

Mentoring

Haolin Ye, Yihan Zhang, Zhaoyue Wang, Xiaojie Xu (McGill University)

Haozhe Zhang, Shujie Deng (University of Toronto)