Mengfei Liu

https://mengfeill.github.io/
https://github.com/mengf821
mengfei.liu@mail.utoronto.ca

EDUCATION

UNIVERSITY OF TORONTO | Supervisor: Eitan Grinspun
Ph.D. student in Computer Science
Expected Nov. 2026 | Toronto, ON

UNIVERSITY OF WATERLOO
Bachelor of Software Engineering
Sept. 2016 - Apr. 2021 | Waterloo, ON

SKILLS

PROGRAMMING
Experienced:
Python • NumPy • PyTorch • Bash • C/C++ • Mathematica • SQL • Java • Git

PUBLICATIONS

Precise Gradient Discontinuities in Neural Fields for Subspace Physics
Mengfei Liu[*], *Yue Chang*[*], *Zhecheng Wang*, *Peter Yichen Chen*, *Eitan Grinspun*
SIGGRAPH Asia 2025
[*]Equal contribution

Lifting the Winding Number: Precise Representation of Complex Cuts in Subspace Physics Simulations
Yue Chang, ***Mengfei Liu***, *Zhecheng Wang*, *Peter Yichen Chen*, *Eitan Grinspun*
SIGGRAPH 2025

Validation of an Improved Vision-Based Web Page Parsing Pipeline
Michael Cormier, *Robin Cohen*, *Richard Mann*, *Karyn Moffatt*, *Daniel Vogel*, ***Mengfei Liu***, *Shangshang Zheng*
ACM Transactions on the Web, Volume 18, Issue 3, 2024

RESEARCH EXPERIENCE

UNIVERSITY OF WATERLOO | Research Assistant
Sept. 2020 - Dec. 2020 | Waterloo, ON

- Conducted fluid simulation research under Prof. Christopher Batty, focusing on solving the Navier-Stokes equation with second-order accuracy on ungraded quadtree/octree grids
- Reimplemented second-order accurate methods for solving the Euler equations on ungraded quadtree/octree structures

UNIVERSITY OF WATERLOO | Research Assistant
Sept. 2017 - Dec. 2017, May 2018 - Aug. 2018 | Waterloo, ON

- Worked under Prof. Jimmy Lin on end-to-end question answering, contributing to retrieval and ranking components
- Developed initial Python bindings for Anserini (later Pyserini) and adapted a Siamese CNN model for pairwise Learning to Rank

UNIVERSITY OF WATERLOO | Research Assistant
May 2017 - Aug. 2017 | Waterloo, ON

- Assisted Prof. Robin Cohen and her PhD student on a research project to improve web page segmentation for screen readers
- Implemented an interface for collecting ground truth data, targeting pages lacking accessibility attributes (e.g., ARIA)

INDUSTRY EXPERIENCE

UBER ADVANCED TECHNOLOGIES GROUP (ATG) | Research Intern
Jan. 2020 – Apr. 2020 | Toronto, ON

- Re-implemented several different approaches of multi-view reconstruction and verified the performance
- Developed a method to reconstruct 3D human shapes from a multiple-camera dome
- Quickly gained knowledge in multi-view geometry, optimization and 3D shape processing

UBER ADVANCED TECHNOLOGIES GROUP (ATG) | Research Intern
May 2019 – Aug. 2019 | Toronto, ON

- Worked on LiDAR point cloud segmentation problems using deep learning approach
- Implemented the segmentation code with CNN using PyTorch

WISH | Data & Relevancy Engineer
Sept 2018 – Dec. 2018 | Toronto, ON

- Built a language detector that is capable of detecting 26 languages with high precision
- Assisted with building new infrastructure for serving user product recommendations
- Compared and analyzed a set of procedures for selectively recommending promoted products and made recommendations regarding the best method

WISH | Full Stack Engineer
Jan. 2018 – Apr. 2018 | Toronto, ON

- Built web applications for non-technical administrators for management work
- Implemented reminders and advertisements in form of UI features such as banners and popups
- Created several diagnostic reports targeting multiple problems of platform that are sent to administrators on a recurring basis

TEACHING

CSC336 — Numerical Methods (TA) Fall 2025
CSC317 — Computer Graphics (TA) Fall 2024
CSC336 — Numerical Methods (TA) Spring 2024
CSC336 — Numerical Methods (TA) Fall 2022
CSC263 — Data Structures and Analysis (TA) Spring 2022