Qiyao **Wei**

Research Engineer

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Education

Bachelor of Applied Science and Engineeing with Minor in Artificial Intelligence — *Toronto, ON, Canada*

University of Toronto, St. George Campus — *September 2017 - June 2021*

- 2017-2021 Dean's List (top 15 %)
- Graduated with Honors

Publication

Conference Proceedings

Can Few-Shot Learners Generalize to Unseen Compositions of Novel Primitives?

Authors: Siteng Huang, **Qiyao Wei**, Donglin Wang — *Oct. 2021*

- Under Review at ICJAI 2022 (impact factor 5.47)

Blog post

Composability in Julia: Implementing Deep Equilibrium Models via Neural ODEs — *[Paper]*

Authors: **Qiyao Wei**, Frank Schafer, Avik Pal, Chris Rackauckas — *Oct. 2021*

- Julia blog post

Work in Progress

Scalable Bayesian Inference from a DEQ Perspective

Authors: **Qiyao Wei**, Zhijie Deng, Jun Zhu

Understanding fully connected ReLU networks through CSWISH: initialization and training

Authors: Ermal Rrapaj, **Qiyao Wei**, Martin Magill, Luca Herranz-Celotti

Critical RePU initialization

Authors: Luca Herranz-Celotti, **Qiyao Wei**, Martin Magill, Ermal Rrapaj

Presentation

Vector Institute Research Symposium 2022 — *University of Toronto*

Presenter for RePU Is All You Need — *Feb. 2022*

- Authors: **Qiyao Wei**, Martin Magill, Ermal Rrapaj, Luca Herranz-Celotti

Asian Conference on Machine Learning 2021 — *Virtual*

Presenter for Deep Equilibrium Models and Neural ODEs — *Nov. 2021*

- Authors: **Qiyao Wei**, Frank Schafer, Avik Pal, Chris Rackauckas

Research Experience

Real AI and Tsinghua University, Research Engineer — *Beijing, China*

Advisor: Jun Zhu — *Oct. 2021 - Present*

- Lower Bayesian inference time consumption by only running one forward pass through DEQ, and use Bayesian Inference in order to enhance the expressivity of Deep Equilibrium Models (DEQ)
- Improve existing DEQ solvers by proposing a new timestep schedule.

Julia Lab MIT, Research Assistant — *Remote*

Advisor: Chris Rackauckas — *Apr. 2021 - Present*

- Expand the DiffEqFlux library with an implementation of deep equilibrium models (DEQ), and simplifies DEQ implementation such that it only changes one line from Neural ODE.
- Enhance OOD accuracy of DEQ models and lower running time by proposing a robust solver tolerance change schedule.

Westlake University, Research Engineer *Hangzhou, China*

Advisor: Donglin Wang *Feb. 2021 - Oct. 2021*

- Developed new baselines and datasets for examining classification robustness in compositional generalization and attribute learn- ing, and proposed new architecture that achieve state-of-the-art on robustness accuracy.
- Created high-accuracy algorithms for few-shot object detection using affordance-training, and improved experiment results by using video stream instead of input data.

Work Experience

Cardinal Operations *Shanghai, China*

Software Engineer *May. 2018 - August. 2018*

- Constructed a distributed-system and multi-processing based scraping mechanism that can collect millions of mer- chandise information and customer comments, robust to anti-robot websites and dynamic ajax on websites.
- Built a MongoDB-based stable data-processing pipeline for data cleaning and noise elimination, filtering outliers, errors, and visualizing the general pattern of data in one run of the algorithm, taking at most 3 minutes.

Teaching

2017-2020 **NeuroTechUofT Workshops** , Teaching assistant *Toronto, Ontario*

2018-2019 **Putnam Competition Advanced Training** , Invited Instructor *Toronto, Ontario*

2015-2017 **County Library Chess Club** , Instructor *Tucson, Arizona*

Honors & Awards

2022 **ICML 2022 Reviewer** , 3 assigned papers

2017 **Walter Scott Guest Memorial Scholarship** , based on academic merit *Toronto, Ontario*