Qiyao Wei

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EDUCATION

University of Toronto Toronto, ON, Canada
Computer Engineering Major, Artificial Intelligence Minor Sep. 2017 – May. 2021
• GPA: 3.7/4.0; GPA for Major courses: 3.9/4.0; Dean's Honor List (2017-present)
• Relevant courses: Introduction to Machine Learning (A+), Artificial Intelligence Fundamentals (A), Matrix Algebra and Convex Optimization, Random Processes, Probabilistic Reasoning, Deep Learning, Max Planck Machine Learning Summer School, Berkeley CS285 Deep Reinforcement Learning, MILA Introduction to Causal Inference
• Skills: Python, Matlab, C/C++, Tensorflow, Pytorch, Numpy, Pandas, MongoDB

PUBLICATIONS

Qiyao Wei, Ehsan Mehralian, Romina Abachi, Amir-massoud Farahmand, "Epidemic Control with Reinforcement Learning", *Technical Report*
Qiyao Wei, "Mirror Descent, Bregman Divergence, and Their ODE Formulations", *Technical Report*

RESEARCH EXPERIENCE

Convex Optimization Techniques
Shanghai University of Finance and Economics, Advisor: *Dong Dong Ge and Yinyu Ye* Aug. 2020 - Present
• Compiled a technical report on the ODE formulation of mirror descent and Nesterov's accelerated method of gradient descent, enhancing pedagogical efforts in the space of discrete and continuous accelerated gradient methods.
• Generalize convergence bounds for new SDP relaxations of QCQP problems

Contrastive Learning in 3D Point Clouds
Stanford University, Advisor: *Leonidas Guibas* Jan. 2021 - Present
• Extend Contrastive Predictive Coding and Contrastive Multiview Coding onto point cloud classification tasks.
• Preparing for paper submission to NeurIPS 2021

Combinatorial Generalization and Compositional Learning
Westlake University, Advisor: *Donglin Wang* Mar.2021- Present
• Develop new baselines for examining classification robustness in compositional generalization and attribute learning
• Preparing for paper submission to NeurIPS 2021

Epidemic Modelling with Reinforcement Learning
University of Toronto, Advisor: *Amir-massoud Farahmand* May. 2020 – Dec. 2020
• Reviewed in literature various compartmental models of epidemic modelling, revealed the disadvantages of compartmental modelling such as long calculation time and high sensitivity to small environmental changes.
• Implemented an SIR-based actor-critic and PPO agent, surpassing heuristic baselines and matching the performance of the optimal control baseline, demonstrated the effectiveness of the RL approach to epidemic control.
• Created one of the first data-driven, RL modelled epidemic control solutions, solving the epidemic control problem in under 10 secs after RL training on epidemic data, without relying on predefined models.

Thermal Infrared Imaging in COVID-19 Detection
Chinese Academy of Science, Advisor: *Li Jiang* Apr. 2020 - Sep. 2020
• Developed one of the first attention-based image segmentation model, allowing for robust body organ segmentation in both RGB and thermal infrared images for high-precision medical imaging.
• Built a body organs temperature based COVID-19 classification model, achieving state-of-the-art accuracy on different symptoms of COVID and Non-COVID lung diseases with multi-task learning.
• Integrated a fast COVID-19 diagnose system, identifying a patient within 1 minute in Shenzhen hospitals.

AWARDS AND HONORS

• Walter Scott Guest Memorial Scholarship 2017-2018