Evelyn Ma

UIUC, US

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Education

University of Illinois Urbana Champaign (UIUC), US — Aug 2020-now

Ph.D. in Industrial& Enterprise Systems Engineering

Imperial College — Sep/2019-Aug/2020

MSc in Risk Manage and Financial Engineering (RMFE)

Tsinghua University (THU), Beijing, China — Sep 2015-Jul 2019

BS in Mathematics and Physics

Recent Preprint

- Xu X, Zhang J Y, **Ma E**, et al. Adversarially Robust Models may not Transfer Better: Sufficient Conditions for Domain Transferability from the View of Regularization[J]. arXiv preprint arXiv:2202.01832, 2022.

Research Experience

Adversarially Robust Models may not Transfer Better: Sufficient Conditions for Domain Transferability from the View of Regularization — Department of CS, UIUC**,** Jul 2021 – Dec 2021

- Theoretically proves that model regularization (lower representative capacity of feature extractor function class) induces better domain generalization, indicating that robustness may be the byproduct of regularization, but not the causality for transferability.
- Propose concrete sufficient conditions on the training process, i.e., constrained norm of the last layer/ constrained Jacobian norm/ certain data augmentations., to promote knowledge transferability.
- Empirically validates our proposed sufficient conditions and the intuition of robustness may not induce transferability on ImageNet by showing that when model robustness is higher but not caused by regularization on the feature extractor, transferability stays the same or poorer.

Semi-supervised learning in image classification — Department of ISE, UIUC, Jul 2019 - Sep 2019

- Replicate the experiment of Unsupervised Data Augmentation, which utilizes reinforcement learning to search data augmentation policy and combine contrastive loss with the supervised objective function.
- Implement experiments to explore a better loss function with theoretical inspiration from other popular empirical self-training methods (ReID, deep clustering, etc.)

Reinforcement Learning in phases of quantum control — Tsinghua University**,** Mar 2019 – Jul 2019

- Replicate related cut-edge methods, numerically simulate the quantum evolution as an MDP, and implement the Q-Learning algorithm to optimize the quantum state control processes.
- Implement experiments to replace Q-learning with other reinforcement learning to compare their performances in the quantum control task and find that SARSA outperforms Q-learning slightly, and none of the algorithms are robust.

Selected Honors and Awards

- Tokyo UFJ Scholarship, THU — 2018
- Runner-up, Lenovo Eco-Intelligent Innovation Finals — 2018
- The winning team, Goldman Sachs 10,000 Women China Student Challenge — 2017
- Grand Prize, Capital Sci& Tech Challenge Cup — 2017

Professional Skills

- **Programming**: Python.
- **Language:** English (proficient); Mandarin (native)