Shaocong Ma

PH.D. CANDIDATE · ELECTRICAL & COMPUTER ENGINEERING

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Education

University of Utah *Salt Lake City, Utah*
PH.D. IN ELECTRICAL & COMPUTER ENGINEERING *Aug. 2019 - Jun. 2023*
- Reviewer for NeurIPS 2021. Sub-Reviwer for FL-ICML'21.
- Program Committee Member for BigData'21 RL Workshop.
- Teaching experiences: Fundamentals of Signals and Systems.

University of California, Santa Barbara *Santa Barbara, California*
M.A. IN STATISTICS *Sep. 2017 - July. 2019*
- Teaching experiences: Statistics for Economics; Survival Analysis; Actuarial Statistics.

Sichuan University *Chengdu, China*
B.S. IN STATISTICS *Sep. 2013 - July. 2017*
- Recieved scholarships in 2014, 2015, and 2016.

Publications

Greedy-GQ with Variance Reduction: Finite-time Analysis and Improved Complexity *ICLR. 2021.*
SHAOCONG MA, ZIYI CHEN, YI ZHOU, SHAOFENG ZOU *Acceptance rate: 28.7%*
- Designed a faster and stable RL algorithm outperforming all existing gradient-based optimal control algorithms.
- Verified theoretical results with OpenAI *gym* environment using large-scale parallel framework.

Variance-Reduced Off-Policy TDC Learning: Non-Asymptotic Convergence Analysis *NeurIPS. 2020.*
SHAOCONG MA, YI ZHOU, SHAOFENG ZOU *Acceptance rate: 20.1%*
- Designed a high-performance algorithm beating all SOTA policy evaluation algorithms.
- Implemented a multi-cores accerlated Reinforcement Learning framework, *GARNET* environment.

Understanding the Impact of Model Incoherence on Convergence of Incremental SGD with Random Reshuffle *ICML. 2020.*
SHAOCONG MA, YI ZHOU *Acceptance rate: 21.8%*
- Theoritically explained how the order of data influences the training procedure.

Projects

MiniFpsGame: A *gym*-Compatible FPS Game Environment *GitHub.com/minifpsgame*
OPEN-SOURCE SOFTWARE
- Developed a minimalistic 3D FPS game based on Pyglet (OpenGL 3D graphics).
- Built multiple human-level agents trained with D3QN and PPO as the environment benchmark.

Agent-Based Object Detection: Construct Trustful Labels without Human-Supervision
IN-PROGRESS PAPER
- Designed a novel RL environment where the agent can learn to label 2D bounding boxes without any external information.
- Achieved competitive MMPs compared with human-labeled dataset (using Faster R-CNN and YOLO V3).

Medical Dataset Analysis: EEG-based Epilepsy Seizure Detection and Prediction
ML COURSE PROJECT (2020 FALL)
- Few-shot learning on highly unbalanced dataset (CHB-MIT Scalp EEG Database).
- Achieved 97.02% accuracy with 56.00% sensitivity.

Skills

Programming   Python (including Tensorflow, Pytorch, OpenAI Gym etc.), OpenGL, SQL, MATLAB, R
Software   Linux, Microsoft Office, Blender, SAS