ZHENDONG WANG

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RESEARCH INTERESTS

I have broad research interests in **statistical machine learning**. Specifically, my research interests lie in :

- Deep generative models, e.g. diffusion models, generative adversarial networks, *etc.*
- Reinforcement Learning, e.g. online/offline RL, imitation learning, *etc.*
- Uncertainty Quantification methods, e.g. conformal predictions, *etc.*

EDUCATION

University of Texas at Austin	Austin, TX
PhD in Statistics and Data Science. GPA: 4.0/4.0	Sep 2020 - Present
Columbia University	New York, NY
M.S. in Data Science. GPA: 4.0/4.0	Sep 2018 - Dec 2019
University of California, Berkeley	Berkeley, CA
B.S. 3+1 Exchange Program. GPA: 4.0/4.0	Sep 2017 - May 2018
Tongji University	Shanghai, CN
B.S. in Civil Engineering. GPA: 91.2/100.0	Sep 2014 - Jul 2017

PUBLICATIONS

[1] **Zhendong Wang**, Jonathan J Hunt, and Mingyuan Zhou. Diffusion Policies as an Expressive Policy Class for Offline Reinforcement Learning. In *International Conference on Learning Representations, 2023.* (ICLR 2023).

[2] **Zhendong Wang**, Huangjie Zheng, Pengcheng He, Weizhu Chen, and Mingyuan Zhou. Diffusion-GAN: Training GANs with Diffusion. In *International Conference on Learning Representations, 2023.* (ICLR 2023).

[3] **Zhendong Wang***, Ruijiang Gao*, Mingzhang Yin*, Mingyuan Zhou, and David M Blei. Probabilistic Conformal Prediction Using Conditional Random Samples. In *International Conference on Artificial Intelligence and Statistics 2023* (AISTATS 2023).

[4] Shentao Yang*, **Zhendong Wang***, Huangjie Zheng, Yihao Feng, and Mingyuan Zhou. A Regularized Implicit Policy for Offline Reinforcement Learning [Preprint arXiv:2202.09673.](#)

[5] **Zhendong Wang** and Mingyuan Zhou. Thompson Sampling via Local Uncertainty. In *International Conference on Machine Learning, 2020* (ICML 2020).

[6] Yuguang Yue*, **Zhendong Wang***, and Mingyuan Zhou. Implicit distributional reinforcement learning. In *Advances in Neural Information Processing Systems, 33, 2020.* (NeurIPS 2020).

[7] Xinjie Fan, Yizhe Zhang, **Zhendong Wang**, and Mingyuan Zhou. Adaptive correlated Monte Carlo for contextual categorical sequence generation. In *International Conference on Learning Representations, 2020.* (ICLR 2020).

EXPERIENCE

Machine Learning Researcher — **Fall 2022 & Spring 2023**

Microsoft Azure AI

Topic: DiffusionGAN for Text-to-Image Generation.

- Add text guidance into the original DiffusionGAN framework.
- Build DiffusionGAN in image latent space, with the help of VQGAN encoder and decoder, to improve sample fidelity. Involve additional consistent loss during training to enhance the text-to-image coupling.

Machine Learning Researcher — Summer Intern 2022

Cortex RecSys Research Team at Twitter

Topic: Diffusion Policies as an Expressive Policy Class for Offline Reinforcement Learning.

- Develop a MLP-based conditional diffusion model as an expressive policy for behavior cloning.
- Add Q-learning guidance into the learning of diffusion models to persue the offline RL objective.
- Conduct toy experiments to validate the regularization behavior of diffusion models and the further improvement from coupling with Q-learning.
- Conduct extensive experiments on D4RL benchmark datasets to show the effectiveness of our method.

Machine Learning Researcher — Summer Intern 2021

Cortex RecSys Research Team at Twitter

Topic: Multi-Task Learning of WebConversion.

- Develop multi-task learning (MTL) models for webconversion tasks from different sources.
- Expect better representation learning from MTL and the learning of each task could help the other tasks.
- Conduct online experiments with the developed models and it shows promising results.
- More feature engineering was conducted to further improve the performance and the code was ready to ship before my leave.

Graduate Research Assistant — Summer 2019 & Spring 2020

Department of Statistics & Data Science, the University of Texas, Austin

Topic: Implicit Distributional Reinforcement Learning.

- Leveraging the power of distributional reinforcement learning, we proposed deep generator networks (DGN) as an implicit distributional Q-function.
- Replaced the common Gaussian policy with a semi-implicit actor (SIA), powered by a flexible policy distribution.
- We incorporate these features with an off-policy algorithm framework to solve problems with continuous action space
- Evaluated our algorithm (IDAC) on RL benchmark tasks (MuJoCo environments) and shown state-of-the-art performance over other baselines.

PROJECTS

Superresolution and Prediction of Ocean Sea-Surface Temperature — Fall 2019

- Implemented the proposed Super Resolution Generative Adversarial Network (SRGAN).
- Evaluated the SRGAN model on the one channel ocean temperature data with 4x resolution upscaling.
- Designed regularization term in objective function to make the generated new ocean temperature data satisfying ocean physical constraints.

Text generation with GAN, Natural Language Processing in CU — Spring 2019

- Implemented base GAN structure, generator and discriminator, for text generation in Tensorflow.
- Employed transformer with attention involved as generator to improve performance.
- Applied Conditional GAN (CGAN) to text migration tasks.

Bayesian Clustering, Bayesian Method Machine Learning in CU — Fall 2018

- Used EM algorithm and Variational Inference algorithm to cluster data.
- Implemented Bayesian nonparametric Gibbs sampler to cluster data.
- Implemented simple version LDA model

Visual Navigation by Deep Reinforcement Learning, Reinforcement Learning in CU — Fall 2018

- Used AI2THOR simulator to establish reinforcement learning environments.

- Implemented deep-siamese network by Tensorflow.
- Implemented A3C method with python and got excellent convergence with only image inputs.
- Achieved scene and target generalization in indoor-navigation.

SKILLS

Programming	Python(Pytorch, Tensorflow, etc.), Java, R, MySQL
Tools	Git, Docker, Kubernetes, AWS
Languages	English, Chinese