HAOZHU WANG

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EDUCATION

University of Michigan Apr 2016 - Dec 2021 (Expected)
Ann Arbor, MI

- Ph.D. in Electrical and Computer Engineering (ongoing). Research interests: reinforcement learning, computer vision, machine learning for healthcare.
- M.S. in Electrical and Computer Engineering (Signal & Image Processing and Machine Learning). GPA: 3.94/4.00.

Tianjin University & **Nankai University** Aug 2011 - July 2015
Tianjin, China

- B.Eng. in Optoelectronics (2+2 joint program). GPA: 3.90/4.00.

Massachusetts Institute of Technology Jan 2015 - Jun 2015
Boston, MA

- Visiting student, EECS.

RESEARCH & INDUSTRY EXPERIENCE

Reinforcement Learning for Automatic Optical Design Jan 2020 - Now
University of Michigan & Inlight Technology

- Developed customized sequence generation model based on GRU for generating multi-layer optical designs.
- Trained sequence generation models with PPO algorithm for automatically designing multi-layer optical thin films with target spectrum.
- Designed multiple multi-layer optical thin films with the developed algorithms for real-life applications.
- Proposed algorithm outperforms previous state-of-art algorithm by 5% on the task of designing a 42-layer incandescent light bulb filter.

Patient Risk Stratification with Individual Treatment Effect Sep 2018 - Jan 2020
University of Michigan

- Proposed a patient risk stratification method based on estimating individual treatment effect under resource constraint settings.
- Cleaned and processed patient EHR data for training patient risk stratification models.
- Developed method outperforms conventional patient risk stratification methods on a real EHR dataset collected at University of Michigan.

Treatment Planning for Occupational Injury Jan 2018 - Dec 2020
University of Michigan

- Cleaned and analyzed an insurance claim dataset with 1.25 million patient records.
- Trained deep learning models for predicting return to work.
- Learned treatment policies with Q-learning from observational data.
- Evaluated the learned policies with weighted importance sampling.
- Learned policy outperformed clinicians' policy.

Deap Neural Network Compression Aug 2017 - Jan 2018
University of Michigan

- Implemented ordered weighted ℓ_1 (OWL) and group OWL (GrOWL) regularized deep neural networks in Tensorflow.
- Investigated sparsity inducing and correlation discovering properties of GrOWL for both convolutional layers and fully connected layers of deep neural network.
- Proposed algorithm improved the stability in model compression.
- Successfully compressed LeNet-5 and VGG-16 for more than 10 times.

PUBLICATIONS

Haozhu Wang, Zeyu Zheng, Chengang Ji, L. Jay Guo. Automated Design of Optical Multi-Layer Films with Deep Reinforcement Learning. *Reinforcement Learning for Real Life*, 2020.

Erkin Otles, **Haozhu Wang**, Suyanpeng Zhang, Brian Denton, Jon Seymour, Jenna Wiens. Return to Work After Injury: A Sequential Prediction & Prescription Problem. *Machine Learning for Healthcare (Clinical Abstract)*, 2019.

(Co-first author) Dejiao Zhang*, **Haozhu Wang***, Mario A.T.Figueiredo, Laura Balzano. Learning to Share: Simultaneous Parameter Tying and Sparsification in Deep Learning, *International Conference on Learning Representations* (ICLR), 2018.

Jiaxuan Wang, Jeeheh Oh, **Haozhu Wang**, Jenna Wiens. Learning Credible Models. *Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. ACM*, 2018.

Haozhu Wang, Jeeheh Oh, Eric Horvitz, Jenna Wiens. Targeting Interventions: Improving Estimates for Individual Treatment Effects by Explicitly Modeling Intermediate Events. (Under review)

Jiaxuan Wang, **Haozhu Wang**, Fahad Kamran, Jenna Wiens. Exploiting Spatial and Temporal Invariances when Mining Player Tracking Data in Basketball. (Under review)

Zhao, Qing-Yuan, Di Zhu, Niccolò Calandri, Andrew E. Dane, Adam N. McCaughan, Francesco Bellei, **Hao-Zhu Wang**, Daniel F. Santavicca, and Karl K. Berggren. "Single-photon Imager Based on a Superconducting Nanowire Delay Dine." *Nature Photonics* 11, no. 4 (2017): 247-251.

Wenqi Zhu, Ting Xu, **Haozhu Wang**, Cheng Zhang, Agrawal Amit, Deotare Parag, Henri Lezec. "Surface-Plasmon-Polariton Laser based on a Metallic Trench Fabry-Perot Resonator", *Science Advances* (2017).

Wang Haozhu, Yang Fenghe, Yang Fan, Nie Meitong, Yang Jianjun. Investigation of Femtosecond-Laser Induced Periodic Surface Structure on Molybdenum. *Chinese Journal of Lasers*, 42(1), 0103001 (2015).

TEACHING

Graduate student instructor Sep 2020 - Now
EECS 442 Introduction to Computer Vision (about 250 students)

Graduate student instructor Jan 2020 - May 2020
EECS 504 Computer Vision (about 120 students)

Graduate student instructor Sep 2017 - Dec 2017
EECS 545 Machine Learning (about 140 students)

SKILLS

Programming Languages: Python, C++, Java, MATLAB, Julia, R

Frameworks & Others: PyTorch, TensorFlow, Keras, Linux, Bash, SQL, Hadoop, Google Cloud Platform, AWS

AWARDS

Rackham Graduate Research Grant ($3000), University of Michigan, 2020

Rackham Graduate Travel Grant ($1200), University of Michigan, 2018

Outstanding Graduate Award, Tianjin University, 2015

National Scholarship, Chinese Ministry of Education, 2014

Kitano Foundation of Lifelong Integrated Education Scholarship, Nankai University, 2013

Grand Prize of Physics Competition for College Students, Tianjin, 2013

First Tier Scholarship, Nankai University, 2012

REVIEWING SERVICE

Reviewer for: NeurIPS'20, MLHC'18-20, AMIA'20
Subreviwer for: KDD'18-19, NeurIPS'18