Wangzhi Dai

wzhdai@mit.edu | 857-999-1734 | wangzhidai.github.io
PhD at MIT EECS | Research Focused on Applied Machine Learning | Looking for 2021 Summer Internship

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)
PhD in Electrical Engineering and Computer Science
2017 - 2022 (expected)
Cambridge, MA
GPA: 4.9 / 5.0

PEKING UNIVERSITY
BS in Electrical Engineering
2013 - 2017 | Beijing, China
GPA: 3.7 / 4.0

SKILLS

PROGRAMMING
Python • C/C++ • Matlab • MySQL
FRAMEWORKS & TOOLS
Tensorflow • Pytorch • Keras
•Scikit-learn • Linux•GIT • LaTeX

COURSEWORK

Statistical Learning Theory
Algorithms for Inference
Natural Language Processing
Machine Learning
Machine Learning for Healthcare
Algorithms and Data Structure
Practice of Programming in C& C++
Microcomputer Principle and I/O Interface
Cellular Neurophysiology and Computing
Quantitative Physiology

AWARDS

- Hewlett Packard Fellowship, MIT
- 3rd Place, Citadel MIT Datathon
- Fangzheng Scholarship for Merit Student, Peking University
- Best Student Paper, IEEE ICSICT 2016

PUBLICATIONS

- First Author Conference Papers
  Neurips ML4H 2020 (To appear)
  IEEE ICDM 2019 (9% Acceptance)
  IEEE TRANSDUCERS 2017
  IEEE ICSICT 2016 (Best Student Paper)
- 7 Co-author Conference & Journal
- Full Publication List:
wangzhidai.github.io/pages/publication.html

RESEARCH EXPERIENCE

DEEP LEARNING FOR MEDICAL SIGNALS | MIT & Mass General Hospital
- Led a team of 5 researchers and clinicians to build and characterize prediction models with echo-cardiogram videos. Achieved state-of-the-art performance in predicting cardiac surgery outcomes with spatial-temporal CNN.
- Built project pipeline for data collection, de-identification, image pre-processing, model building and evaluation. Organized computing infrastructures & codes.
- Developed segmentation and feature extraction tools for ECG with Hidden Markov Models for risk stratification in collaboration with 3 MIT researchers.

GENERATIVE MODELS WITH DISENTANGLEMENT | MIT EECS & IMES
- Proposed a Contrastive Variational Autoencoder with disentangled latent space to model cross-domain objects.
- Applied models to solve class imbalance problems with generative oversampling using shared variance between groups.
- Developed an individual treatment effect estimator in observational studies with multiple treatment groups.

UNCERTAINTY OF CAUSAL INFERENCE ASSUMPTIONS | MIT-IBM AI Lab
- Developed a quantitative measurement to asses the Common Support assumption for individual treatment effect estimation.
- Facilitated the estimation with an uncertainty measurement with regard to distribution overlap.

SINGLE PREDICTION RELIABILITY | MIT-IBM AI Lab
- Co-developed methods with IBM researchers to evaluate prediction reliability on a single object using ensemble modeling and class-balanced accuracy.

PROJECTS

SENTIMENT ANALYSIS | Natural Language Processing
- Developed a parse tree based model for sentiment analysis in negation contexts. Explicitly modeled linguistic constraints such as c-command and syntactic rules to recursively determine the sentiment of a sentence.

VIDEO TRANSLATION | Machine Learning
- Performed a human pose translation from video to video by training a GAN to generate fake videos using extracted human pose features from Densepose.

BIAS DETECTION | Machine Learning for Healthcare
- Discovered and analyzed bias of data in Electronic Health Record due to missing values. Developed a heterogeneous imputation method and improved prediction tasks performance.

TEACHING & MENTORING

MACHINE LEARNING |Teaching Assistant, MIT EECS, 2019
Graduate level class covered theory and techniques of statistical learning. Led weekly recitation sessions, created notes and homework, advised 30 students' final projects.
MACHINE LEARNING WITH PYTHON | Course Developer, edX, 2019
Course covered practical ML algorithms and implementations. Designed homework, projects and exam problems. Worked with edX engineers to create online code judge.
RESEARCH MENTOR | MIT EECS
Supervised 3 MIT Master and Undergraduate students for research in deep learning models for cardiovascular diseases.