Ziteng Pang

EDUCATION

University of Michigan, Ann Arbor   Sep 2020 - May 2022

Master of Science, Applied Statistics

- GPA: 4.0/4.0
- Outstanding 1st year Master's student
- Ph.D. level courses: regression analysis, optimization
- Master's level courses: regression analysis, multivariate analysis, probability theory, data science with Python

University of California, Irvine   Sep 2017 - June 2020

Bachelor of Science, Mathematics with Concentration in Data Science

Minor in Statistics

- GPA: 3.89/4.0
- Courses: real analysis, linear algebra, numerical analysis, introductory abstract algebra, convex optimization, combinatoric and graph, statistical methods, probability

Foothill College   Sep 2013 - June 2017

Associate in Science, Engineering (transferred before completion)

- Completed 125 unites and transferred 105 unites to UC, Irvine

RESEARCH EXPERIENCE

Machine Olfaction (project leader)   Oct 2020 - Present

About: Studying olfaction learning task with a focus on graph neural network (GNN) and 3d representation

Supervisor: Professor Ambuj Tewari

- June 2021 - Aug 2021: Graduate Student Research Assistant, paid position
- Explored, analyzed, and implemented a variety of models including GCN, MPNN, E(n)-equivariant GNN, and 3D CNN on voxelized graph
- Experimented on cross-domain transfer learning
- Contacted slicing analysis on the across different input type and model type
- Currently focus on the multi-instances learning setup

Bayesian Light Source Separator   Dec 2020 - Present

About: De-blending and cataloging light sources from galaxy survey using variational inference

Supervisor: Professor Jeffrey Regier

- Analyzed and provided a new perspective to the tiling mechanism, showing its previously overlooked strength
- Experimented with ResNet, ResNeXt, and VisionTransformer and improved the star encoder model using a residual network
- Analyzed and improved the galaxy model using a customized iteratively optimized auto-encoder model
- Developed the RayTune hyper-parameter tuning routine

- Proposed and implemented various of code style and refactoring
- Improved device management and added multi-GPU support

Dr. Xiangmin Xu Neuroscience Lab   Oct 2019 - Mar 2020

About: Studying mice neuron response to environmental stimuli

Supervisor: Professor Xiangmin Xu

- Conducted exploratory data analysis for neuron signal and environmental stimuli experiments
- Performed data cleaning, feature engineering, extensive exploratory data analysis for the laboratory data
- Conducted statistical tests in finding location cell and boundary cell

PUBLICATION

In preparation:

Ismael Mendoza, Runjing Liu, Derek Hansen, Zhe Zhao, **Ziteng Pang**, Camille Avestruz, and Jeffrey Regier. Bayesian Light Source Separator (BLISS): Probabilistic Detection, Deblending and Measurement. *Monthly Notices of the Royal Astronomical Society.*

FEATURED KAGGLE COMPETITIONS

OpenVaccine: COVID-19 mRNA Vaccine Degradation Prediction   Aug 2020 - Oct 2020

About: Designing stable mRNA molecules by modeling RNA degradation

- **Team Silver medal - top 3% - 38/1636 teams**
- Contributed to design the attention based graph neural network model and the Transformer based model

CHAMPS Predicting Molecular Properties   Jun 2019 - Aug 2019

About: Building fast and accurate algorithm to model scalar coupling constants between pairs of atoms

- **Solo Bronze medal - top 9% - 221/2749 teams**
- Explored a variety of domain specific features including finding the effective feature, dihedral angle for a subset of coupling type
- Final model consists of gradient boosting trees with features built by Atom-centered Symmetry Functions
- Managed a remote server with AWS EC2 to conduct the project enabling extensive computation costly experiments

LANL Earthquake Prediction   Apr 2019 - Jun 2019

About: Modeling time-to-failure to earthquake under controlled laboratory setting with time-series data

- **Team Bronze medal - top 9% - 382/4540 teams**
- Explored a variety of domain specific feature engineering strategies and models
- Final model consist of an ensemble of gradient boosting trees and long-short memory neural network using Fourier transformation and Butterworth filter as part of the feature engineering pipeline

INTERNSHIPS

Business-intelligence of Oriental Nations Corporation   Beijing, China

Data Analyst Intern   Aug 12, 2019 - Aug 31, 2019

- Produced data cleaning and exploratory data analysis for a dataset of business contracts from the client company
- Developed a ranking algorithm with data driven and domain knowledge inspired features to monitor risky contracts

Teradata   Beijing, China

Data Analyst Intern   June 1, 2019 - June 31, 2019

- Helped developing a time-series forecasting model predicting monthly income for the client company
- Assisted interpreting existing model that classify potential unsatisfying customers

SCHOOL PROJECTS

Galaxy Detection Challenge   Nov 2020 - Dec 2020

About: Modeling the number of blended galaxies

- **1st place of the class**
- Explored extensively and implemented a variety SOTA models on computer vision including VGG, ResNet, Vision Transformer, and pseudo labeling
- Task specific data augmentation of generating densely populated galaxy images with sparse galaxy images
- Final model consists of an Vision Transformer inspired model tailored to the learning task

Steganography   Mar 2019 - June 2019

About: Inconspicuous image encryption

- Developed a encrypting and decrypting model by implementing a convolutional auto-encoder neuron networks to
- Improved the model to encode three times of its original number of pixels while preserving its appearance to human eyes

Sudoku Solver   Mar 2019 - June 2019

About: Building Sudoku solver with linear programming

- Analyzed traditional backtracking methods in different board sizes of Sudoku problems
- Built a more robust linear programming algorithm to solve Sudoku problems that scales better with board size

SKILLS

- **Programming Languages**: Python (3+ years of extensive experience), R
- **Machine Learning libraries**: PyTorch (2+ years research experience), LightGBM, etc
- **Tools**: Remote development, Vim, LaTeX, Git