Experience

University of Houston - Research Assistant
Houston, TX
2021 - present

- Built a disease classification model with 97.5% prediction accuracy with Random Forest algorithm using sklearn
- Derived permutation-based feature importance based on OOB score using rfpimp package
- Fine-tuned parameters of ADMM algorithm application for diffeomorphic matching of non-rigid surfaces
- Developed a resolution downsizing algorithm of 3D images based on metrics-induced graph connectivity using Matlab

Aikynetix LLC - Computer Vision Engineer - Internship
Houston, TX
Summer 2022

- Built an api for face detection and face tracking application using MMpose, FaceNet models
- Tested and integrated pose and object detection models such as hrnet, resnet, yolov, tcformer into application
- Built and trained a custom pose classification NN model with 98% hold-out accuracy using PyTorch
- Developed algorithms for estimation of human physical parameters from video streams using OpenMM, OpenCV
- Built a phase detection algorithm of a human motion based on SSIM using Cupy

University of Minnesota - Quantitative Research - Internship
Minneapolis, MN
Summer 2020

- Worked on solutions of reducing the computational cost of the Greeks estimation for intra-day options trading.
- Implemented and fine-tuned quadratic interpolation for Delta/Rho variables producing 3−5% relative error of approximation.
- Tested and debugged other proxy models for the Black-Scholes model of the Greeks.

Education

University of Houston
Houston, TX
2020 - 2024

Ph.D. in Applied Mathematics

Wayne State University
Detroit, MI
2018 - 2020

M.S. in Mathematics

Al-Farabi Kazakh National University
Almaty, Kazakhstan
2005 - 2009

B.S. in Mathematics

Skills & Knowledge

- Programming: Python, MATLAB, C++, R, SQL
- Frameworks: PyTorch, TensorFlow/Keras, OpenMM, OpenCV, NumPy, pandas, sklearn, SciPy, git, SLURM, ssh/remote, bash/zsh, GCP, Docker, VSCode, PAPI/TAU/OMP, multiprocessing
- Relevant coursework: Optimization, Probability & Statistics, Numerical Methods, Deep Learning, Data-Driven Algorithms, Statistical Data Analysis, High-Performance Computing, Linux/Cluster Computing
- Certifications: TensorFlow Developer Certificate, Transfer Learning for Images Using PyTorch, Linux, etc

Publications

1. Automatic classification of deformable shapes
   H. Dabirian, R. Sultamuratov, J. Herring, C. El-Tallawi, W. Zoghbi, A. Mang, R. Azencott

Machine Learning Course Projects

- Age Recognition | Data-Driven Algorithms, University of Houston
  I conducted age recognition problem as my final project during the Pattern Recognition course I completed at the University of Houston. I transformed 30k+ of face images from Kaggle into 128 measurements using OpenFace. Then I implemented the PCA analysis and ML algorithms such as SVM, Random Forest to solve the age recognition problem. Repo.
- Financial Hedging | Math-to-Industry Boot Camp, Securian Financial
  We worked in a team researching solutions for reducing the computational cost of the estimation of the Greek variables on the options market. My main contribution was to test performance of quadratic interpolation as a proxy model for the Black-Scholes model for Delta and Rho variables producing 3−5% relative error of approximation. Repo.
- Match Prediction | Statistical Data Analysis, Wayne State University
  As part of the Statistical Data Analysis course at Wayne State University, I conducted a final project focused on match prediction problem. I have collected 5k+ tennis match data from internet websites using parsing Python packages. Then I implemented ML algorithms such as KNN, QDA, LDA, Ridge&Lasso methods producing 89% prediction with KNN. Repo.

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