Radmir Sultamuratov

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Education

University of Houston — Houston, TX
Ph.D. in Applied Mathematics — 2020 – 2024

Wayne State University — Detroit, MI
M.S. in Mathematics — 2018 – 2020

Kazakh National University — Almaty, Kazakhstan
B.S. in Mathematics — 2005 – 2009

Work Experience

University of Houston — Houston, TX
Graduate Research - Part time — 2021 – present

- Image registration of MRI/echocardiography (Dicom, Nifti) images using Matlab, Python, ANTs
- Trained a heart disease classification model using deffiomorphic registration intrinsic features method and classical ML models yielding 97.5% OOB accuracy with Random Forest algorithm
- Implemented deep learning/transfer learning of VoxNet, PointNet, 3D autoencoders to tackle Alzheimer decease prediction problem based on MRI images using TensorFlow
- Enhanced numerical implementation for 3D shape registration optimization, utilizing a diverse range of methodologies including PCG, Newton's method, splitting techniques, and others
- Developed several 3D mesh coarsening methods suitable for different types of shapes and scenarios

Aikynetix — Houston, TX
Machine Learning Engineer - Internship — Summer 2022

- Built an api for realtime face detection and face tracking application using MMpose and OpenFace toolboxes
- 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% held-out accuracy using PyTorch
- Developed human physics parameters and pose phase estimation for video streaming using OpenCV

Securian Financial — Minneapolis, MN
Quantitative Research - Internship — Summer 2020

- Implemented quadratic interpolation for Delta/Rho variables producing 3-5% rel.error of approximation
- Worked on solutions of reducing the computational cost of the Greeks estimation for intra-day options trading

Innovation High School — Almaty/Aqtau, Kazakhstan
Math Instructor, Competitive Coach - Full time — 2009 – 2018

- Taught regular and competitive disciplines such as Number Theory, Combinatorics, Projective Geometry, etc.
- Aided 100+ students in achieving accolades on national/international competitions
- Received an Honorable Mention from the Minister of Education

Publications

1. *Automatic classification of deformable shapes*, doi:10.48550/arXiv.2211.02530
H. Dabirian, R. Sultamuratov, J. Herring, C. El-Tallawi, W. Zoghbi, A. Mang, R. Azencott

2. *Maximum Matchings in Rectangle*, gs-citation; pdf
A. Dzhumadil'dayev, R. Sultamuratov

Skills

Programming: Python, Matlab, C++, R, SQL

Frameworks/Software: PyTorch, *TensorFlow/Keras*, openmm, opencv, pandas, sklearn, openface, git, SLURM, ssh/remote, bash/zsh, google cloud, docker, vscode, omp, multiprocessing, ANTs, labelme, slicer

Relevant coursework: Optimization, Probability & Statistics, Spatial Modelling, Numerical Methods, Deep Learning, Data-Driven Algorithms, Statistical Data Analysis, High-Performance Computing, Linux/Cluster Computing

Machine Learning Course Projects

Age Recognition | Data-Driven Algorithms, University of Houston | *GitHub*

- Transformed $30k+$ of face images from Kaggle into 128 measurements using OpenFace
- Implemented the PCA analysis and ML algorithms such as SVM, Random Forest to solve age recognition problem

Match Prediction | Statistical Data Analysis, Wayne State University | *GitHub*

- Collected $5k+$ tennis match data from internet websites using parsing Python framework bs4
- Implemented ML algorithms such as KNN, QDA, LDA, Ridge&Lasso methods producing 89% prediction with KNN