Jiayue Sheng
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Education

Northwestern University, Evanston, IL   Present
The Graduate School
Master of Science in Electrical Engineering
GPA: 3.91/4.0
Expected Graduation: June 2021
Relevant courses: Computer vision, machine learning fundamentals, signal detection and estimation, introduction to communication network, geospatial vision and visualization.

University of Wisconsin Madison, Madison, WI   May 2019
Bachelor of Science in Electrical Engineering
Additional Major in Computer Science
Relevant courses: Java and C programming, electronic circuits, real-time signal processing, digital signal processing, matrix methods in machine learning.

Experience

Northwestern University, Evanston, IL   February 2020 – Present
Thesis: Evaluation of mitral regurgitation severity using PISA with color-flow Doppler echocardiography
- Use optical character recognition to extract velocity range from color-flow Doppler images.
- Use ImageJ to analyze DICOM medical images
- Use python to design deep neural network and use color-flow Doppler images to classify the severity of mitral regurgitation.

Carnegie Mellon University, Pittsburgh, PA   May – August 2018
Internship: Analysis of QM7 and ANI1 dataset with machine learning
- Use Python to develop linear ridge regression algorithm and kernel ridge regression algorithm.
- Classify QM7 and ANI1 dataset based on provided features with linear ridge regression and kernel ridge regression.
- Analyze and compare the error resulted from the regression to find better model and the relationship between the features.

Projects

Northwestern University

DeepCOVID-XR: An Artificial Intelligence Algorithm to Detect COVID-19 on Chest X-rays

April – November 2020

Second Author. Paper has been accepted by Radiology journal.

Preprocessed chest x-ray images with deep neural network with python OpenCV and Keras packages.

Fine-tuned deep neural network with python package Keras to perform transfer learning on chest x-ray dataset.

Analyzed results such as the ROC curve and confusion matrix from validation set and test set.

Northwestern University

Gunshot detection and localization with machine learning   January 2020 – April 2020
Used MATLAB and Adobe Audition to design low-pass filter and band-reject filter.

Classified gunshot recordings and non-gunshot recordings using support vector machine, k-nearest-neighbor, Adacost and long-short term memory models in python with SciPy package.

Analyzed ROC curve and confusion matrix and used leave-one-out to evaluate the performance of models

Skills

Programming Language: MATLAB (5 years), python (3 years), C (2 years), Java (1 years), HTML (<1 year)
Software: Excel (1 year), Microsoft Visual Studio MFC library (<1 year), Opencascade library (<1 year)