

Jiayue Sheng

jiysheng@ucdavis.edu

608-556-8698

<https://sites.northwestern.edu/jiayuesheng/>

Education

University of California-Davis, Davis, CA

Present

The Graduate School

Doctor of Philosophy in Electrical and Computer Engineering

GPA: 3.88

Expected Graduation: August 2025

Relevant fields: Deep learning, machine learning, principal component analysis, 3-D imaging, image processing

Northwestern University, Evanston, IL

September 2021

The Graduate School

Master of Science in Electrical Engineering

GPA: 3.93/4.0

Expected Graduation: June 2021

Relevant courses: Computer vision, machine learning fundamentals, signal detection and estimation

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, digital signal processing, matrix methods in machine learning.

Experience

Northwestern University, Evanston, IL

February 2020 – August 2021

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 resulting from the regression to find a better model and the relationship between the features.
-

Projects

Hyper spectral image reconstruction with deep neural network

August 2021 – present

- Simulate CASSI compressed hyper spectral image dataset with Python.
- Construct convolutional neural network to reconstruct compressed hyper spectral images.
- Train deep neural network on compressed 2D hyperspectral image dataset.

DeepCOVID-XR

April –August 2020

Published online by Radiology: R. M. Wehbe *et al.*, “DeepCOVID-XR: An Artificial Intelligence Algorithm to Detect COVID-19 on Chest Radiographs Trained and Tested on a Large US Clinical Dataset,” *Radiology*, p. 203511, Nov. 2020, doi: [10.1148/radiol.2020203511](https://doi.org/10.1148/radiol.2020203511).

- 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.

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: Python (6 years), MATLAB (6 years), C (2 years), Java (1 years), HTML (<1 year)

Software: Adobe Premiere Pro(1 year), Microsoft powerpoint (4 years), Excel (2 year), Microsoft Visual Studio MFC library (<1 year), Opencascade library (<1 year)

Platform: Amazon Web Services (<1 year)