

Yu Xuan Yong

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EDUCATION

University of California, San Diego, La Jolla, CA

M.S in Machine Learning and Data Science

September 2021 – June 2023

- Coursework: Prob & Stats for Data Science, ML for Physical Applications, Intro to Visual Learning, Advanced Computer Vision, Linear Algebra and Applications

B.S in Cognitive Science w/ Spec. in Machine Learning and Neural Computation

September 2019 – August 2021

- Coursework: Intro to Machine Learning, Intro to Reinforcement Learning, AI Algorithms, Supervised Machine Learning Algorithms

SKILLS

Languages: *Proficient:* Python, C++, MATLAB, SQL | *Basic Understanding:* Java, R

Frameworks & Libraries: scikit-learn, PyTorch, Pandas, Keras, Matplotlib

Developer Tools: Kubernetes, Git, Docker, Jupyter

Machine Learning: CNNs, GANs, K-means, Linear Regression, PCA, K-NN, Clustering, Autoencoders

RESEARCH EXPERIENCE

Graduate Research Assistant – SRIP Ophthalmology Lab

September 2022 – June 2023

University of California, San Diego

- Performed Linear Regression on 24-2 VF from Optic Nerve Head OCTA Images on Choroid, RPC and Superficial layers to predict MD, PSD, TD and PD values used to diagnose glaucoma.
- Created class activation maps of mean deviation values using ResNet to indicate predictions of areas of degeneration of nerves in the optic nerve head.
- Conducted ETL using Pandas on 24-2, 10-2 and RNFL medical data and used cross validation to create training, test and validation sets.

Graduate Research Assistant – VVIP Lab

September 2021 – June 2023

University of California, San Diego

- Created an embedded estimator using PyTorch with a VGG-16 backbone architecture that streamlines classification tasks and utilizes high bit precision computation when required.
- Utilized transfer learning to attempt to improve performance of embedded estimator.
- Utilized GANs to augment data to further boost the prediction power of the embedded estimator.
- Bridged pretrained model with embedded estimator to measure and predict accuracy.

ACADEMIC PROJECTS

Machine Learning for Physical Applications – Image Processing and Object Detection with Low Light Images

- Implemented unsupervised machine learning models like EnlightenGAN, REDNet and ICENet to brighten low light images.
- Utilized Faster-RCNN in conjunction with processed images to conduct object detection. Successful in identifying objects with REDNet, EnlightGAN and LIME. Achieved losses of less than 5% using stochastic gradient descent.

Modeling and Data Analysis – Lesion Type Detection

- Used feature selection and dimensionality reduction techniques such as t-SNE, PCA and autoencoders to select most relevant features from feature space of lesion data.
- Used clustering techniques like K-means and Spectral Clustering and Gaussian Mixture Models to predict the placement of different lesion types in the brain.

Intro to Visual Learning – Image Inpainting

- Implemented U-Net with partial convolutions as a machine learning model to fill up images with relevant pixels and recreate incomplete images.