

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, SciPy

Developer Tools: Kubernetes, Git, Jupyter

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

Certifications: Google Data Analytics Specialization

RESEARCH EXPERIENCE

Graduate Research Assistant – SRIP Ophthalmology Lab

September 2022 – September 2023

University of California, San Diego

Glaucoma Prediction w/ ONH OCTA Images

- Performed Linear Regression on 24-2 visual field on different ONH layers to predict deviation values used to diagnose glaucoma.
- Created class activation maps from ResNet to indicate predictions of areas of degeneration of nerves.

Glaucoma Prediction w/ 24-2 Visual Field

- Applied Pandas and sklearn libraries to stratify and split medical dataset on a patient level into train, validation, and test sets.
- Trained multilayer perceptrons (MLP) using 52-point 24-2 visual field as input to predict deviation values used to diagnose glaucoma.
- Created a Python class and script to streamline dataset creation and machine learning processes.

Graduate Research Assistant – VVIP Lab

September 2021 – June 2023

University of California, San Diego

Embedded Estimator

- Created an embedded estimator using PyTorch with a VGG-16 backbone that streamlines classification tasks by only using high bit precision computation only when necessary.

ACADEMIC PROJECTS

Image Processing and Object Detection with Low Light Images

- Trained unsupervised machine learning models using CNNs as a backbone to learn how to brighten low light images.
- Conducted object detection with processed images and achieved losses of less than 0.05.

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.

Image Inpainting

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