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Undergraduate Independent Study Project Presentation
CSE 5951/2/3

Title: Deep Learning-Based Glaucoma Detection Using the EyePACS AIROGS-Light Dataset

Date: December 5, 2025

Time: 11:00am

Zoom Link: https://csusb.zoom.us/j/9095375333

Advisor: Yan Zhang

Abstract: Glaucoma is a leading cause of irreversible blindness, making early detection essential, though clinical screening is often subjective and resource intensive. This project aims to develop a deep learning model that classifies retinal fundus images as Referable or Non-Referable Glaucoma, in an effort to help people that may struggle with vision lost in the future, using the EyePACS AIROGS-Light v2 dataset, which provides balanced training, validation, and test. The workflow includes image preprocessing, normalization, and data augmentation, followed by training multiple

CNN architectures including transfer-learning architectures such as ResNet50 and EfficientNetB3. Hyperparameters will be tuned using the validation set, and performance will be assessed through accuracy, precision, recall, F1-score, AUC-ROC, and confusion matrices. Grad-CAM will aid interpretability. We will be using libraries such as tensor flow and numpy to help with the preprocess and training of the CNN model.