Computer Vision Poster Summaries

Nebil Ibrahim

1. Improving Foreground and Background Image Segmentation

Authors: Markos Markakais, Joe Zhang

The task was to use a UNet architecture (Image Segmentation) outside of a medical context. In this case that was horse images with left facing horse. There was some data augmentation performed on these networks which was minimal and kept them in the same relative orientation. A smaller version of the network (Lil' UNet) was used for the horse images since they are lower resolution. The baseline with data augmentation ended up performing the best and Lil' UNet with data augmentation perform worst.

2. Determination of Cleanliness of a Space

Authors: Skylar Jung

The task was to take an image of a room and assess its cleanliness. There were a few approaches tot his there was a binary classifier which had good accuracy no training but horrible testing accuracy (58%). Binary classification was better with data augmentation, but still only 66%. There was also an attempt to classify by category but that only reached 23% testing accuracy. Better architectures could not be used due to hardware limitations and labeled training examples were hard to get.

3. Experimentation in Image Classification of Recyclables

Authors: Carl Sun, Tanh Nguyen, Grace Chen

The task was to use computer vision to identify the material something was made of and if it was recyclable. The dataset is the trashnet data set. The original architecture was implemented in lua so

they reimplemented it in pytorch. They were unable to achieve what the original trashnet project did so they instead used the pytorch tutorial neural network which performed better. They augmented images as well as tuning hyperparameters such as number of layers, types of layers, and weight initialization. The best accuracy came from using the entire image with no crop, using kaiming initialization, and increasing epochs.