Queen’s University PPS: Android Waste Classification

Many people, especially Queen’s students understand the importance of proper waste disposal. However, it is not always obvious what the proper bin may be for different common waste items. The goal of this work is to develop a computer vision model that will be deployed on tablets around campus to properly classify common waste items and help students dispose of their items responsibly. With the help of the client, Queen’s Physical Plant Services, the project aims to provide proper disposal instructions for a range of common items found on campus. Images were collected for training off of existing datasets of projects with similar goals and common data augmentation techniques to expand our dataset were used. The team has made use of the EfficientNet model, a convolutional neural network architecture pre-trained on the ImageNet dataset, by retraining the model on the dataset for this work. Currently the model is performing with 98% accuracy on the validation set but not receiving the same results on the deployed model. This drop in accuracy is due to added background noise in images classified by our deployed model. Added research is being done to eliminate this difference in accuracy. The application development is ongoing to ensure an easy and secure user experience across campus of the model. The team is also considering secure deployment options of the tablet. This project offers promising results to provide Queen’s students with a simple, yet powerful tool to help dispose of their waste items responsibly.