COMP 4471 Project Proposal
Google Landmark Recognition

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We are going to investigate landmark recognition in this project, in which we will develop a landmark recognition model for people to better understand and organize their photo collections. It is a Kaggle Challenge held by Google, and the image data can be retrieved from Kaggle(www.kaggle.com/c/landmark-recognition-2020). We will only use its training dataset, and split it into training, validation, and testing parts. To achieve the goal, the following pipeline is proposed. We will first do exploratory data analysis (EDA) on the dataset to have a better understanding of the dataset. After that, some preprocessing work will be done based on the result of EDA. For instance, we might perform data resampling for the imbalance dataset, and the images may need to be cropped and resized to ensure the consistency of data input to the model. Also, data augmentation, such as random resize and color jittering, can prevent overfitting issues. Then, we can design our recognition model. Some existing models, such as ResNet and EfficientNet, will be trained and evaluated in order to find the best model for landmark recognition. Transfer learning can be used to speed up the training process, and some pretrained models are available in the PyTorch library. In order to get better performance of the model, some hyperparameter tuning techniques should be used, such as grid search and bayesian optimization. After the training process, the evaluation will be conducted by the accuracy and confusion matrix analysis. We will compare the performance of each model based on its evaluation.