The topic I will be focusing on for this project is **Classification of Weather Images.** The dataset I will be using can be found on Kaggle (https://www.kaggle.com/datasets/jehanbhathena/weather-dataset). It is a dataset of over 6,000 images of nature/the outdoors in various weather conditions. The datasets are all labeled with classes such as rain, snowy, rainbow, fogsmog, etc.

A related article (https://www.kaggle.com/code/hamzamanssor/weather-recognition-using-deep-learning-models#%E2%9C%94%EF%B8%8F-ResNet) trained various different types of classifiers on this dataset and displayed their performances at the bottom. I propose that for this project, I will focus on a specific neural network, the ResNet50 network, and improve on its 83% accuracy performance with this data set.

To do this, I will introduce the usage of a pre-trained ResNet50 network which utilizes the ImageNet data set. I then plan to experiment with freezing some or all of the pre-trained weights, and have the final layer learn weights specific to the weather images dataset in order to implement transfer learning. I also plan to introduce various forms of data augmentation such as discoloration, scaling, slight rotations, and vertical/horizontal translations.