**CSE 510**

**Applied Deep Learning**

**Final Project Abstract**

**Multi-Class Image Classification for Weather Dataset**

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1. **Topic**: Multi-Class Image Classification for Weather Dataset.
2. **Objective**: The objective of this project is to build a web app that classifies different weather conditions based on the images provided. Our goal is to provide an economical and efficient solution to predict weather patterns from an image rather than relying on complex systems (sensors, satellites) used today.
3. **Technical Outline**:
   1. Front End:
      1. Building a UI that can accept an image from the user and send it to the backend (neural network).
      2. Accept the result from the backend and display the result (weather pattern) on the UI.
   2. Back End:
      1. Taking the dataset and splitting it into test and train.
      2. Implementing a deep CNN model on the dataset and saving the model.
      3. Accepting a new image from the UI and predicting the weather pattern by running it through the trained model.
4. **Algorithm & Dataset**:
   1. Algorithm: We plan to build a Web application in Flask to efficiently classify the weather dataset. We will be running a deep convolution neural network on the backend, which does the classification and displays the weather pattern on the browser-based on the given user image.
   2. Dataset: Ajayi, Gbeminiyi (2018), “Multi-class Weather Dataset for Image Classification”, Mendeley Data, v1.

[Multi-class Weather Dataset for Image Classification](http://dx.doi.org/10.17632/4drtyfjtfy.1)

1. **References**:
   1. [End to End Multiclass Image Classification Using Pytorch and Transfer Learning](https://lionbridge.ai/articles/end-to-end-multiclass-image-classification-using-pytorch-and-transfer-learning/)
   2. [Multiclass Image Classification with Pytorch | by Nandan Pandey | Analytics Vidhya | June 2020](https://medium.com/analytics-vidhya/multiclass-image-classification-with-pytorch-af7578e10ee6)
   3. [Classification of Weather Images using ResNet-34 in PyTorch](https://medium.com/swlh/classification-of-weather-images-using-resnet-34-in-pytorch-7e86b2b24dcf)