**Project 4 Proposal**

**Title:** Human Emotion Recognition

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**Project Description/Outline:**

Creating a machine learning model for classifying images of human facial expressions by their emotion, into one of seven different categories.

The dataset used was obtained from Kaggle, from the following links: https://www.kaggle.com/datasets/sudarshanvaidya/random-images-for-face-emotion-recognition

https://www.kaggle.com/datasets/jonathanoheix/face-expression-recognition-dataset

The purpose of this project is to develop a machine learning model capable of accurately determining the emotion a human is displaying based on their facial expression. The dataset contains images categorised into: anger, disgust, fear, happiness, neutrality, sadness, and surprise.

Additionally, we will create a second model for determining if an image is of a human face or not. This will be used in conjunction with the emotion model, for determining if images are suitable for it. If this human face model determines that a given image is of a human face, then it will pass the image along to the emotion model for emotion classification. However, if it determines that the image is something other than a human face, then it will stop there and won’t pass it along.

The dataset for the human face model will be made up of human faces, sourced from the previously mentioned Kaggle datasets, and images of various other things (animals, plants, objects, etc.). These “other” images have been obtained from Kaggle, from this link: https://www.kaggle.com/datasets/prasunroy/natural-images

**Research Question:**

Analysing human facial expressions to determine the emotion they represent.

**Breakdown of tasks:**

* Data collection (there are 27,000+ images divided into 7 emotions: anger, disgust, fear, happiness, neutrality, sadness, and surprise. All images contain a human face. The two Kaggle sources used differ in the dimensions of their images, so they will need to be resized to be consistent.)
* This project will use the Pandas, Matplotlib, and NumPy libraries for Python. Google Colab will also be used.
* Following preprocessing of data, Tensorflow and Scikit-learn will be used for the development of the machine learning model
* Train the Model
* Test the Model
* Refine the model
* Save the model
* Prepare a Readme File
* Create a write-up summary based on our findings
* Present our findings via Powerpoint presentation