Facial Recognition in Computer Vision Using Features Extracted from Partial Differential Equation Kernels

Partial Differential Equations (MC-406)

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Overview

Facial Recognition has become a very common tool that we see and use on a daily basis from our phones to our laptops. It is also a tool that is being used for security purposes as well.

The current state of the Art methods use a Convolutional Neural Network applied on images to recognize features. I am proposing a novel method that uses a pre built Laplaian or other PDE related kernel to extract features from an image and then we can use these features to train a Convolutional Neural Network (cNN) to identify Faces.

This method will help us store models and also faces in a simplified manner as rather than storing entire image files (jpeg/png) we can just store the extracted features as a vector which will take up very less space and we can use that as an identifier for images.

This novel approach will also ensure that we can train, test and evaluate our model faster as rather than working on entire images or videos, we can run it on an extracted features vector which will run faster.

This model can then be implemented on any device and will be deployable.

Specifications

This project will be built on top of Python3 Language and all the mathematical formulas etc. will be implemented by me only. For training a cNN Tensorflow or Keras framework will be used.