Interims

Report Writing

Team #: YWiC 1
School: YWiC
Area of Science: Biophysics/Computer Science
Project Title: Using Facial Recognition To Make Neural Networks

Problem Definition

According to Todd Matthews “On average, 90,000 people are missing in the USA at any given time” (1). Missing people are a large problem in the USA. Some are found within minutes, but others are not and end up dead. Sometimes, criminals can also escape without punishment. Criminals and missing people aren’t always recognizable at a glance from humans, so current automated facial recognition technology often misses them. Both of these could have higher solution rates if facial recognition technology was better.

Problem Solution

The solution to the problem, as said above, is better facial recognition technology. The solution, to be coded, is with an Artificial Neural Network. Using Artificial Neural Networks, the computer will analyze a picture of a person and be able to distinguish it from others in a crowd. Artificial Neural Networks will run multiple inputs at the same time, making it faster and more reliable. The use of measurements instead of ratios will allow for more flexibility in what angle the picture is, the lighting, how much of the face is showing, etc.

Progress To Date

The main research has been completed towards the basic algorithms and theories to our software. Ajmal S. Mian has stated, “Changes caused by expressions, illumination, pose, occlusions and facial makeup (e.g. beard) impose further challenges on accurate face recognition.”(6) Therefore, instead of using color based inputs or expressions, length measurements will be used. This allows them to be taken from any angle regardless of outside changes. Sources have been found, and inputs being used to recognize the faces have been decided. There will be approximately 20 inputs: RGB values of the eye, RGB values of the skin, length of eye inner brow to center of nose on both sides, cupid's bow measurement, angle of the arch of the eyebrows, RGB value of hair, length from one eye to the next, length of the mouth, height of the eyes, and more. The programming has also been started, with the underlying matrices being completed. Future meetings have been planned through February. The rest of the project has been planned out with the timeline:

November: RESEARCH! Begin code.
December 10th: Complete interim report. Finish timeline.
December 31: Complete code.

January: Start report rough draft
January 31: Finish report rough draft
January 31: Code trained.
February: Test the code. Make adjustments
March 11: Perfect code.
April 1: Finish display board.
April 4: Turn in final report. Practice presenting
April 24: Present at Expo

Expected Results

The data collected from the pictures will create a database. From the database, a new picture will be analyzed and given an "identity". The outcome of being able to identify a person can then be used in finding the person in a crowd. It is expected that the program will scan the entire face and mark each input. Ideally, each input will then go through their own neural network at the same time. All of these will then be put together as a list to go with the person they belong to. The program will be expected to identify any picture and match it with another in the database or say the picture is not in the database.

Team Members

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