CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0312

Project Title
Facial Feature Recognition

Abstract

Objectives/Goals
The brain is very good at recognizing faces, even though the basic structure of all faces is relatively similar. People can recognize thousands of different faces. We wondered which part of the face the brain is best at recognizing. We think that the eyes are the easiest part of the face to recognize.

Methods/Materials
Step 1: Find photos of 30 famous people, and crop and size with photoshop.
Step 2: Crop and print the photos so there is a nose, mouth and eyes for each person. (45 photos in all.)
Step 3: Have test subjects mark celebrities that they recognize, on a list of names.
Step 4: Show test subjects the noses, mouths and eyes separately of 15 famous people that they know of, in random order.
Step 5: Ask test subjects to identify the person in the cropped photos and guess if they are unsure. (We did not force an answer if they couldn't guess.)
Step 6: Tally responses, calculate percent correct. We did statistical comparisons using Microsoft Excel. (T-test 2-tailed paired.)

Results
On average, 12% of test subjects correctly identified the celebrity from the photo of the nose. By contrast, 44% correctly identified the mouths of the celebrities, and 52% made a correct identification from a photo of the eyes. 0% of test subjects correctly identified more celebrities from photos of noses rather than eyes or mouths. 53% of test subjects correctly identified more eyes than mouths, and 40% correctly identified more mouths than eyes (and one test subject performed equally with mouths and eyes). Pictures of eyes or mouths appear to give more identifying information to the brain than pictures of noses.

Conclusions/Discussion
We show that there is a significantly easier to identify a face by looking at the eyes in comparison to the nose. We also show that noses have significantly less identifying features than mouths. Our original hypothesis was that eyes would be the most characteristic feature of the face. We failed to show that there is a significant difference in comparison to looking at mouths, however, most of our test subjects did find it easier to identify eyes than mouths. (If there is a significant difference, it would likely require many more test subjects to determine this.)

Summary Statement
In our project, we tried to find out whether it easier to recognize a face by the eyes, nose or mouth.

Help Received
Parents helped type pages for board. Science teacher helped with procedure.