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2002 PROJECT SUMMARY

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22534

Project Title
A Novel Search for Face Attractiveness Using Reverse Correlation Methods and Web-Based Visual Experiments

Abstract

Objectives/Goals
With our research, we can obtain a more complete picture of the brain and its involvement in perception.| Neuroscientists can use our model to understand people#s perception of beauty, and plastic surgeons and developers in the beauty industry can use this technique to make people look more attractive.

Methods/Materials
This Web-based experiment is set up on a Linux computer using the Apache Web server and a mySQL database and is written in Perl. Observers created an account,logged in, and selected an experiment. Th| rated the attractiveness (from 1 to 10, with 10 being the highest) of 100 stimuli, either male or female| images, randomly generated from the data file on-the-fly.
Finally, to analyze the test data, we imported the user information and responses from the database to MATLAB and EXCEL for further mathematical and statistical analysis.

Results
By determining a correlation between the observer#s response and a filtered signal pattern, we created a| kernel. After adding the kernel to the base image using reverse correlation, we produced a more attractive face than the original one. Out of the 4,092 pixels representing a human face, only 134 key pixet contribute to an attractive face.

Conclusions/Discussion
The reverse correlation technique and classification image (kernel) are effective methods for studying face attractiveness. Reverse correlation directly estimates the areas of an image that observers used to rea| their decisions. Since this method is based on one model, it can determine the significant components that yield attractiveness.

This Web-based experiment offered significant advantages to traditional lab experiments. Outside of the| U.S., we gathered data from participants all over the world in countries like the United Kingdom, Greece| Spain, Australia, and the United Arab Emirates. Online experiments allow for hundreds of users t participate in the experiment simultaneously at minimal costs. As high bandwidth becomes more readily available, we can incorporate more features such as dynamic filtered signals, movie scripts, and colorfu| images into online experiments.

Our goal is to investigate spatial sampling strategies used by observers in choosing between an unattractive and attractive face. Finally, we can explore possibilities of the model in other fields of|

Summary Statement
Reverse correlation and Web-based experiments were used to generate an attractive face and to determine significant components for attractiveness in a human face.

Help Received
Used lab equipment at USC under the supervision of Dr. Biederman