

Resistor Classification Proposal

We read some research papers about the technology behind Fischer faces and realized how it might turn out better results when it comes to differences in lighting and image perspective angles. A prominent paper that we referred to was the work by Belhumeur, Hespanha, and Kriegman on "Recognition Using Class Specific Linear Projection." Another paper we looked at was "Colour Eigenfaces" by Finlayson, Dueck, Funt, and Drew. Which is another algorithm we are considering implementing.

Can there be a technology that can make the component work of electrical engineers that are color blind easier? We aspire to make a program that can aid these engineers so they can easily identify simple components like color-coded resistors by using a Fischer faces or color Eigenfaces recognition algorithms with a set of training images that are commonly used resistors in education and industry.

The technology could be harmful to the learning process of non-color blind aspiring electrical engineers because they may depend on this technology rather than using the color bands. The question about ethics is that whether this program could hinder the learning process. It might harm the learning environment.

For the application of Fischer faces, we majorly use the techniques of scatter matrices, eigenvectors, normalizations, and Fischer face projections. For the application of color Eigenfaces, we will use vector representations of the red, green, blue pixel values to represent each pixel. Our analysis will be the application of our model to a set of test images. We train our model using test images of the commonly used resistors. We expect the result to tell us the number of eigenvectors that give us the highest accuracy %.