Algorithms to Detect Color Variations for the Visually Impaired

Lopez, Mercedes (School: Socorro High School)

Monochromacy and Achromatopsia are color deficiencies in which people cannot see specific or no color at all. Color deficiency can either be inherited through genes or acquired. This project aimed to develop a user-friendly application that accurately distinguishes and names the color of objects or landscapes in images. The methodology involved creating a model that accurately identified twenty-seven main colors and their spectrum hues. The application was designed to be versatile and included the option of either taking a photo or choosing an image from the user's phone gallery to distinguish the color of any object or landscape the user wanted to know the color of. The project's results proved promising in distinguishing and naming colors for the user in brightly lit areas, both in natural and artificial lighting, where more light waves were present, resulting in vibrant colors. This application proved to have an impact in aiding people with color deficiencies without purchasing expensive, specialized contacts or glasses. The development and success of this project are a testament to the capability of coding and utilizing technology to help those who can benefit from it the most.

Awards Won: