

Team name: Ccolor

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Ccolor is a comprehensive, augmented reality solution to a currently incurable genetic disease—color blindness. Ccolor allows color blind users to differentiate colors with corrective filters, and determine what color an object is with an easy-to-use color picker.

We had already created the Ccolor app, and released it on the iOS App Store. However, we were inspired to create a poster to further promote our app and receive broader recognition.

Blog post:

Ccolor is an iOS app (available at <https://itunes.apple.com/us/app/ccolor-color-blindness-ar-solution/id1253347573?mt=8>) which provides an augmented reality solution for colorblind users to differentiate colors in the world around them. Specifically, the app uses the iPhone's built-in camera combined with corrective filters to display colors in a way that allows colorblind users to tell them apart. We decided to create a poster and compete in the Little Bang! competition so that we could further promote our app and receive broader recognition, while receiving additional feedback and advice from people that have a large amount of industry experience. We feel that we learned a lot by participating in the competition, and we are looking forward to taking new steps to further improve our user experience.

Fortunately, we already have created a good first version of the app: it is reliable, has a very clean user interface, and works well overall. In addition, we have purposefully designed the app to be usable universally: we implemented accessibility features, such as speaking color names out loud for more heavily visually impaired people, and translated it to Simplified Chinese, Japanese, Spanish, and French to accommodate international users. While we have worked to make the user experience as effective as possible while assisting many diverse users, we believe we have much more work to do to create a better world for people suffering from colorblindness.

First, we would like to interview more potential users, and get more specific feedback on the app and user experience. One challenge of creating this app is that we ourselves are not colorblind, so inherently it is difficult to fully imagine how much assistance the app provides. Though we have talked to a few colorblind people, and one of them used the app to solve an Ishihara colorblindness test, we should contact more colorblind people, and get their feedback about the user experience of the app in their daily lives. In particular, we have not yet tested the app with people who suffer from tritanopia, and plan to do so soon. Since some form of colorblindness is fairly common (affects 1 out of every 12 men), the easiest way for us to find people to interview is connecting with them on social media. With this approach, it is reasonable to expect to interview around 10 users by March, and hopefully find at least one person with tritanopia (since it is more rare).

The next major technological step for Ccolor is further developing our semantic image segmentation technology. Often, the colors humans perceive are not exactly the true colors, but are tied to the semantics of the colored object. For example, if I see a green jacket, then I naturally perceive the whole object as green: but in reality, much of the jacket might be closer to a gray color rather than a green color, if the lighting is rather dark. The Ccolor app might therefore recognize the jacket as being gray (if the user taps on a shadowed part of the jacket), while semantically the jacket must be considered as one whole green object. To improve this aspect of Ccolor we plan to integrate deep learning technologies (see <http://blog.qure.ai/notes/semantic-segmentation-deep-learning-review>) to semantically segment images. We need to review the latest cutting-edge research papers, and work on implementing them on iPhone. Hopefully the core of this model can be completely by April.

By participating in the Little Bang! competition we feel like we learned the importance of focusing more on marketing and getting our product out in the world. Though we have already built a good app, and plan on making it even better, there is a whole world of colorblind users which could benefit from our app, but might not even know that it exists. We look forward to attacking this challenge in the near future. Lastly, we plan to incorporate judge's feedback, in particular clarifying on the poster what resolution the app runs at.