

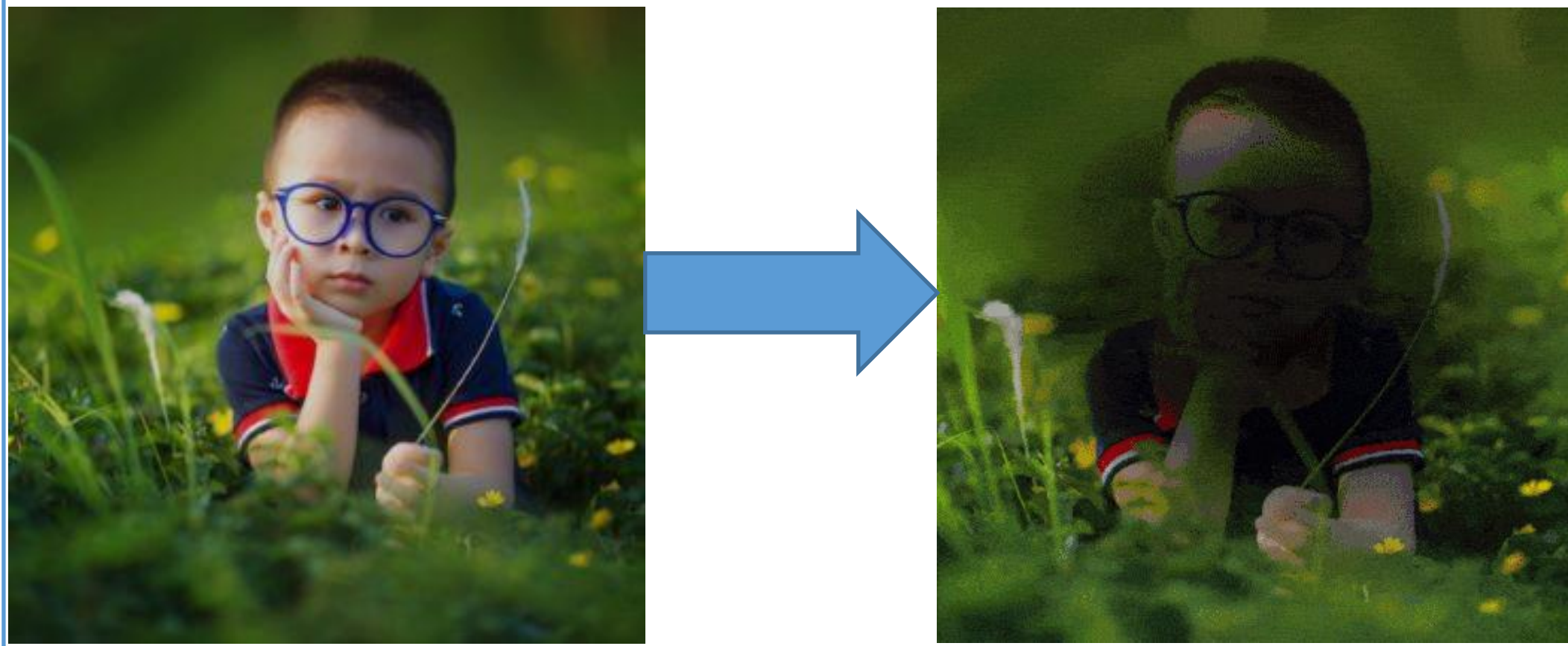
Smart Glasses

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What is Macular Degeneration?

Macular degeneration is when parts of the retina begin to degrade so people lose areas of their vision. This is the most common cause of loss of vision in people over the age of 60. There is no cure and treatment options are limited since every person's case is different.



What is Augmented Reality?

Augmented reality is having an experience of the real world modified and then given back to the user. In the case of this project, the real world is recorded and then shifted as to account for the individual with macular degeneration.

Magic Leap

- Augmented Reality Startup company
 - High Processing Power
 - High Resolution
- Transformation and Magnification
- Cheapest market solution that fits needs(\$2,300)



Current Market Solutions



Microsoft- HoloLens
Price- \$4,900



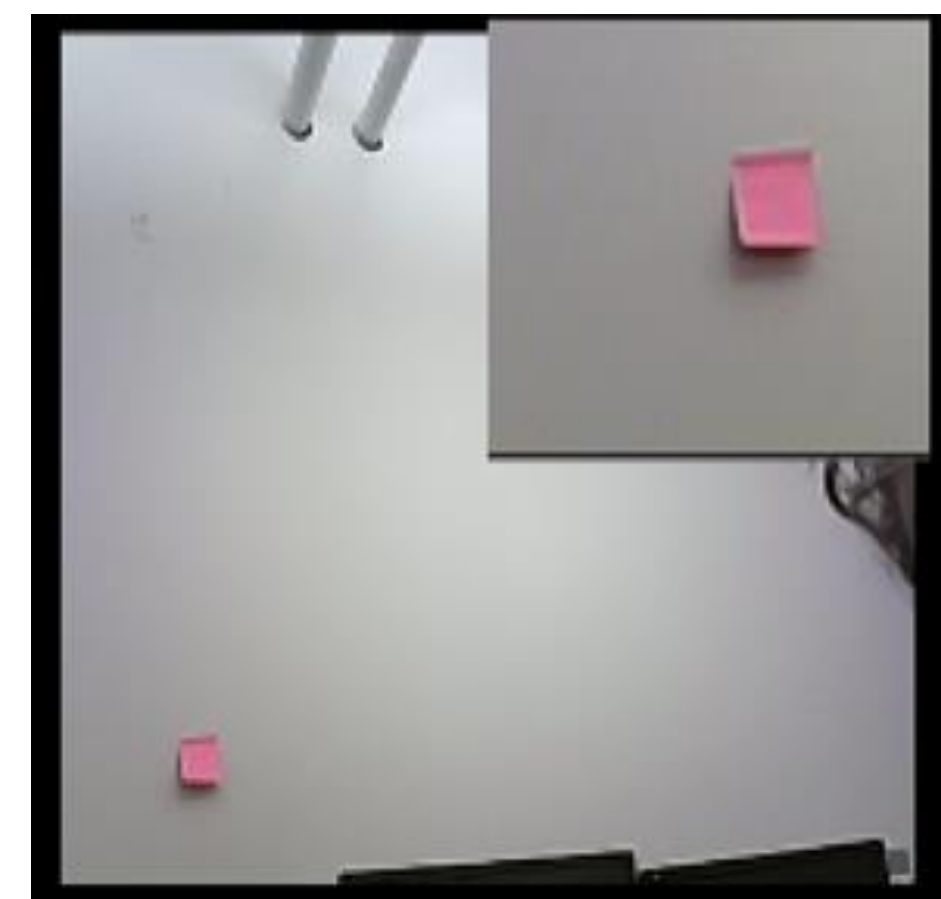
Vuzix Blade
Price- \$1,000

Project Objectives

- Utilize Augmented Reality Glasses to assist with Macular Degeneration
- Use Real Time Image Capture as a feedback system
- Movement and Magnification
- App Development to Replace Controller
- Quality of Life Improvements

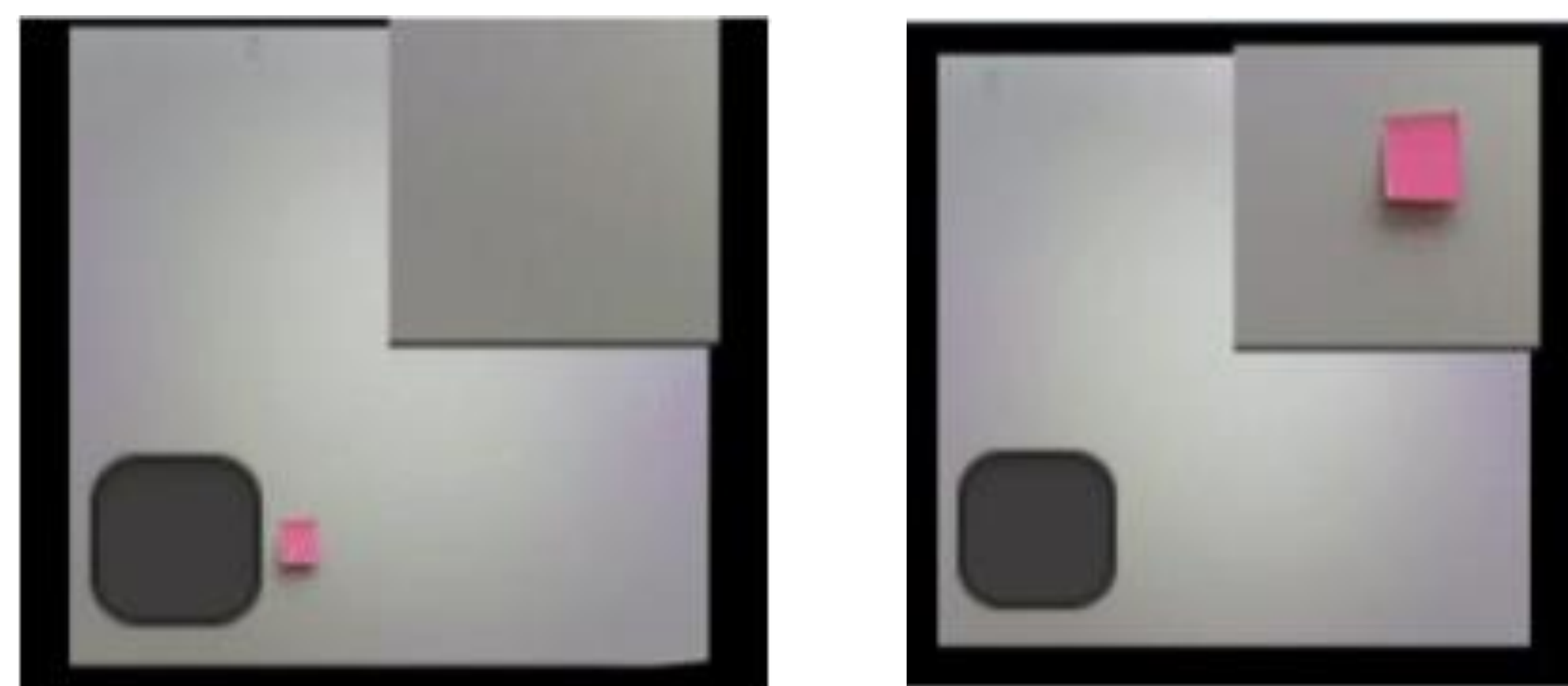
Transform and Video Encode

- Designate Blind Spots
- Take active video capture
 - Convert into pixel values
- Create object for movement or magnification
- Place pixels into transformation object



Movement

Due to Macular Degeneration being individualistic. We want to move the area that each user can't see to an area in which they can see. This circumnavigates the blind spot



Completed Work

- Real time video feedback system
- Image Movement
- Image Magnification
- App Development Skeleton



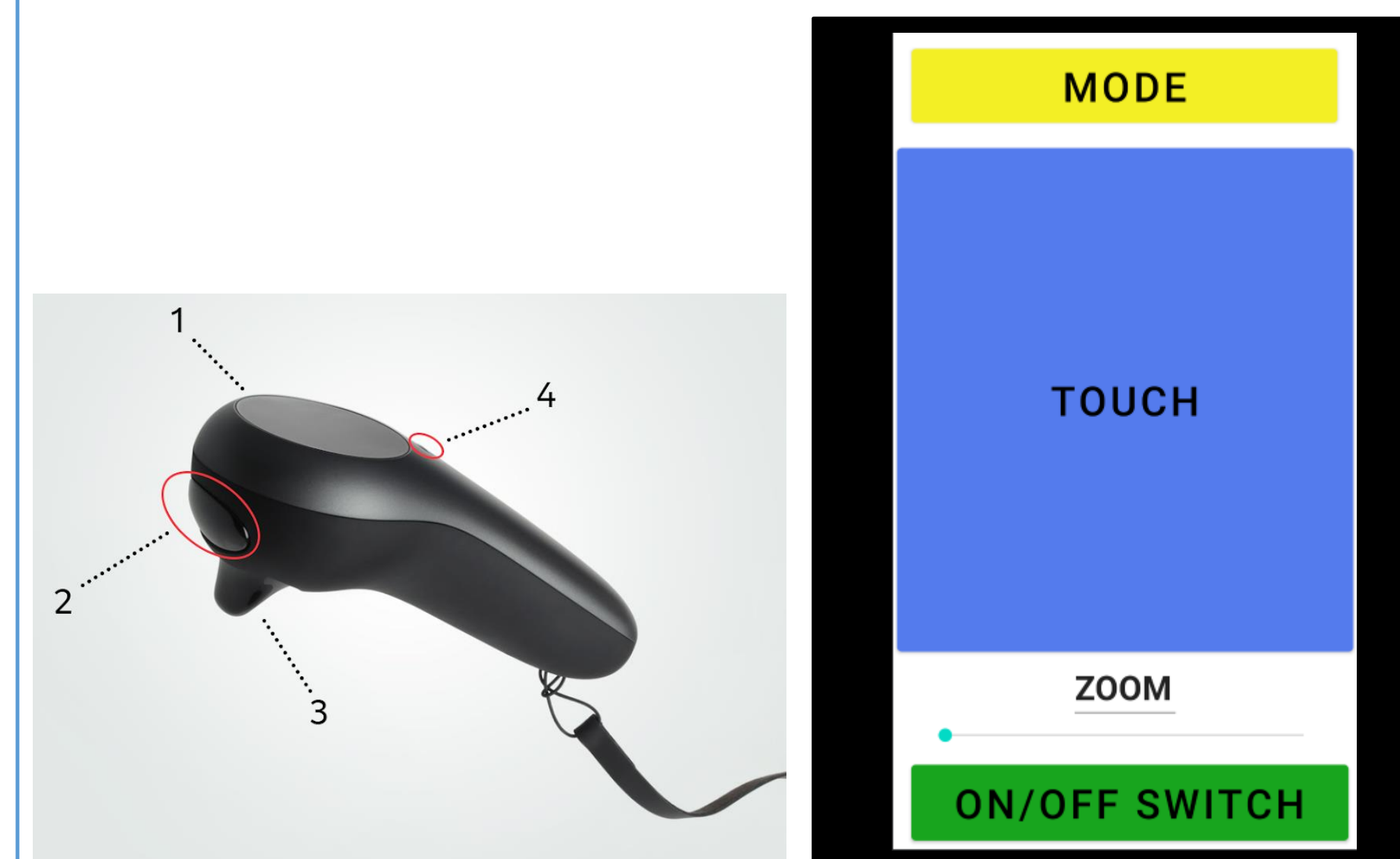
Magnification

Magnification can relieve some of the effects of macular degeneration and poor eyesight. This will allow users to zoom up to 2x into the image that they wish to be displayed.



App Development

An assisted app will allow the user to get instructions on how to operate the glasses and provide an alternative to the controller.



The Team and Sponsors

Ensignt Skills Center(Denny Moyer)
Colorado State University



Current Obstacles

- Magic Leap recently underwent a systems update that caused the Image Movement to corrupt.
- Magic Leap is currently losing support/funding.
- Current method of Image Movement is very constrained.
- The glasses overheat after about 6 minutes of running.
- Creating a mapping interface on the App for a replacement controller is very individualized to Magic Leap.

Future Plans

- Switch back to usage of the HoloLens due to increased funding and support
- Implement Bluetooth connectivity to App
- Implement Contrast and Brightness
- Enable user defined transformations
 - Different shapes and sizes