Smart Glasses for the Blind and Visually Impaired
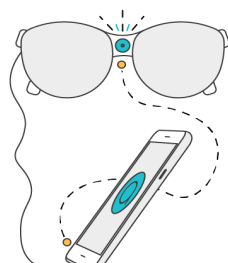
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## RESEARCH

Various "Smart Glasses" technologies exist on the market today, using integrated or attached cameras to record and use live images in different ways. A popular company called Aira uses Smart Glasses to connect with a trained assistant that then uses the camera to guide the visually impaired or blind user, allowing them more freedom in their daily lives, but they still must rely on another person.

IDEATION
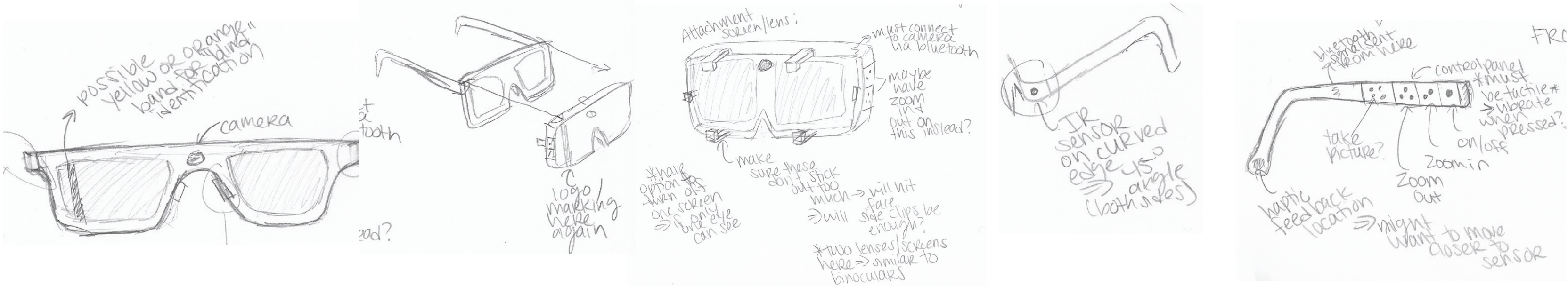
This prototype of Smart Glasses integrates the various existing smart glasses technologies with the current image recognition software into one set of glasses with an optional attachment. The glasses would include a camera between the lenses and connect to a smart phone via Bluetooth, while also including infrared obstacle detection technology to alert the user via haptic feedback of any approaching obstacles. The optional attachment would allow for visually impaired users to zoom/in out of images seen by camera.

MOCKUP
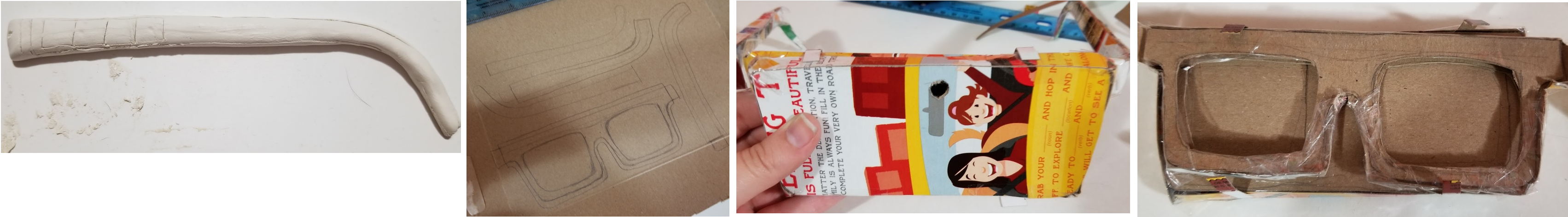
The mockups were made using clay and thin cardboard. The clay allowed for the creation of a more natural shape, as with the glasses lenses and arms, while the cereal box cardboard showed modular design and functionality.

MODEL
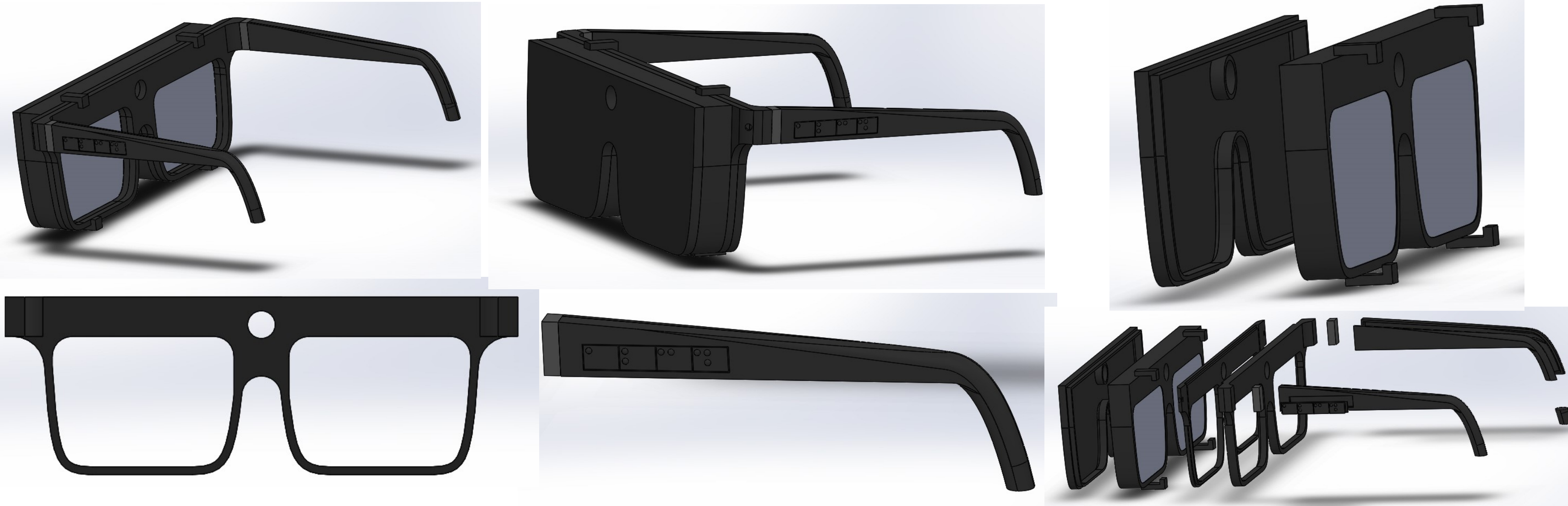
The design is modular to allow for 3D printing with a snap fit of the pieces, as well as insertion of electrical components. Future designs would need to account for tolerancing of various 3D printers and include nose pads, charging ports, and real clips on the attachment piece as well as real hinges. The hinges are based on existing hinges that allow for wires to pass through unharmed. The control panel on the arm includes four touch-sensitive buttons labeled with the braille letters "A" through "D", following standard Braille conventions. The buttons allow for zooming in, out, capturing and image, and turning device on/off.