SAVIUTS: Sensory Aid for the Visually Impaired Utilizing Time-of-flight Sensors

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SAVIUTS (Sensory Aid for the Visually Impaired Using Time-of-flight Sensors) is a sensory aid device that has the potential of impacting millions of lives around the world. Traditional visual aids for the blind consist of very inefficient, expensive technology to improve navigation. We sought to design and construct a visual aid that would assist a blind person in navigating their environment. Design constraints: Device must be easily wearable. Provide live updates about the environments. Be easily reproducible. Cost less than 100 USD. SAVIUTS uses time-of-flight sensors, which emit class-1 lasers to find distances of objects. The sensors report distances to three Adafruit Trinket M0 microcontrollers, which actuate small vibrating motors. This haptic feedback allows the wearer to use their other senses independently of SAVIUS. Additionally, the haptic feedback is discrete and completely unnoticeable to those not using the device. The project met our design criteria. It provided live updates about surrounding environment, and is easily reproducible. Additionally, using off-the-shelf electronics, we were able to reduce the price of SAVIUS to 100 dollars. It is streamlined, easily wearable, and contains its own rechargeable power supply.

Awards Won: