Haptic Vision: An Assistive Device for the Visually Impaired

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To visually impaired people, everyday, normal tasks, such as getting up and walking around become a daunting task. Visually impaired people also have a much higher chance of getting an injury from tripping and falling as compared to someone with normal vision. This device uses a LiDAR distance sensor connected to a wireless microcontroller to gauge the user's distance to an object in front of them. These components are situated in the necklace part of the device. The necklace then relays this distance measurement to another wireless microcontroller which is connected to a vibration motor. This microcontroller and vibration motor are situated in the wristband part of the device. The wristband vibrates with increasing intensity as the user approaches an object. Through testing, it was determined that a LiDAR sensor is best for this application. This is because of its superior range, precision, and accuracy as compared to other distance sensors. This device will aid visually impaired people like my grandfather to avoid obstacles in their path.

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