Economical Optimal Optical Obstacle Proximity Detector

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The white cane has helped the blind for centuries, but how can this basic invention be revolutionized using twenty-first century technologies at an affordable price? This project tackles the main problem with a white cane: the lack of sideways perception. Distance sensors were added to a standard white cane at angles both left and right, and user feedback is given through vibration sensors. The effectiveness of the sensors was tested by moving objects towards the individual at several velocities and at several angles (left and right). Tests were completed by recording the distance at which user reaction occurred. Our hypothesis was that those who are sight-impaired can sense and avoid objects approaching from increased angles, emulating peripheral vision. The experimental results support this hypothesis by showing that an increased peripheral perception can be achieved through intensifying vibration feedback based on the proximity of an object.

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