iTrack

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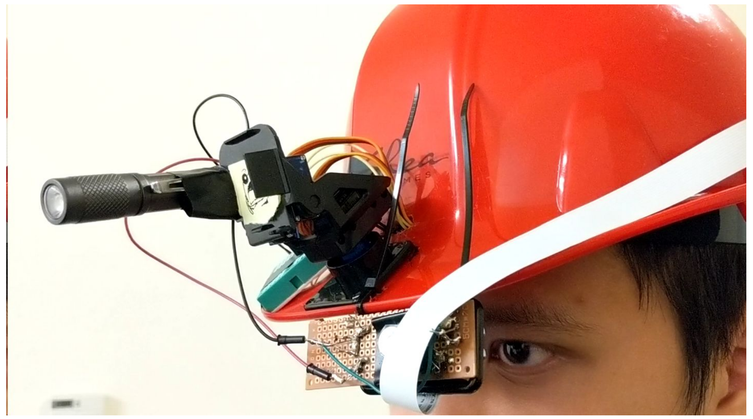
Why Use iTrack?

iTrack is a system that uses eye tracking technology which takes the user's eye as an input to aim a flashlight where the user is looking at. The device gives users more flexibility with their hands and more control with their eyes. It can be used to help disabled people, or it can be used as a pointing device.

Features

- Hands-free operation
- Functional in the dark and in poor lighting conditions
- Low power consumption
- Accurate and precise pointing
- Portable

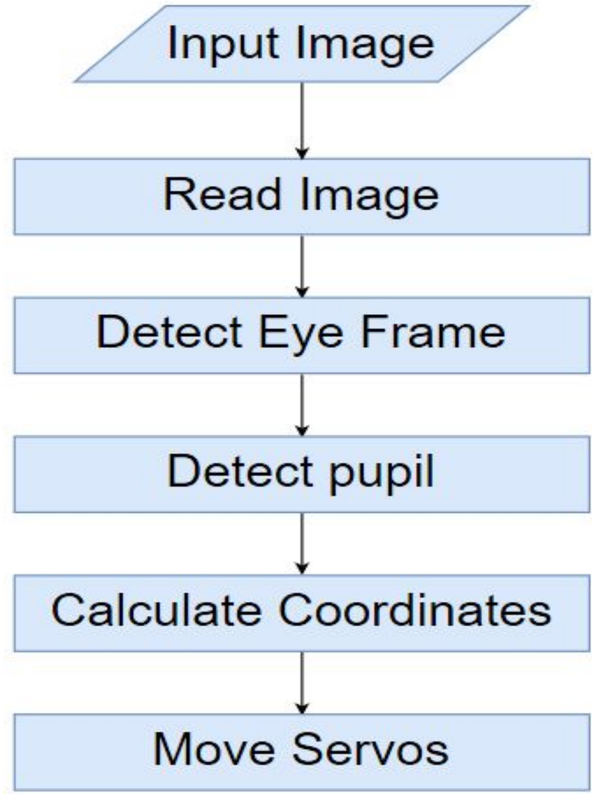
Hardware



- Raspberry Pi 3B+
- Camera module with IR illumination
- Pan-and-tilt mounted flashlight
- Hardhat

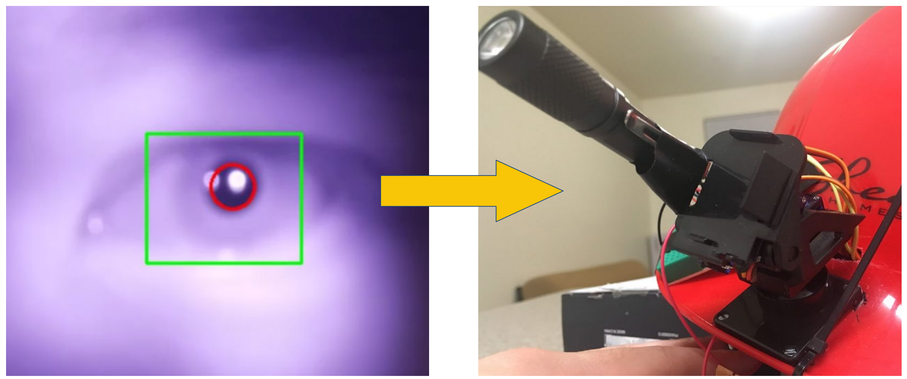
Software

The eye is detected by OpenCV, a black & white threshold is applied, and then the center weight of the pupil is extracted. The displacement of the pupil from the center of the eye is used to set the angle the flashlight is aimed at.



How it Works

iTrack translates eye movements with any device. Motion control is accomplished through a non-obstructive mounted camera, Raspberry Pi, and a pan-and-tilt module. In the working prototype, iTrack points a flashlight wherever the user looks at.



References

1. G. Bradski,The OpenCV Library, Dr. Dobb's Journal of Software Tools (2000)
2. Freenove Ultimate Starter Kit for Raspberry Pi (2019)