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AIoT Coding, Engineering and Entrepreneurial Skills Education for Gifted Students

iSee

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Abstract

Elderly's mobility and eyesight tend to deteriorate over the years which results in constant accidental trips and falls. We aim to improve the situation by designing "iSee" with collision avoidance technologies.

Objective/Background/Motivation

- About 36 million falls are reported among older adults each year
- Visually-impaired individuals and elderly tend to have low mobility and may bump into objects/obstacles easily
- Having noticed how common this phenomenon is, we hope to improve the situation

- Alerts users of nearby obstacles
- Ultimately prevents accidental trips

Methodology

- Collision avoidance and obstacle detection device
- A tiny webcam attached onto a mobile device
- Includes a buzzer that goes off when the user is near to an object/obstacle
- Technologies used: object detection, python, arduino sensors
- Testing was done repeatedly on a microsoft tablet device in early stages

Results/Application

- When the device is placed near an obstacle, a buzzing sound is heard
- When the device is not placed near any object, nothing happens
- Most useful for the elderly (living alone) and the visually impaired

https://github.com/Adelinelee0220/cityu-gef-23-24-final-project

https://youtu.be/9FUy_fxGrRI

Discussion/Conclusion

In conclusion, we have understood how to utilise different technologies to form creative solutions to solve problems. We have achieved a greater understanding of collision avoidance technologies and arduino, as well as object detection technologies. Some possible improvements or amendments include a broader usage of our device (e.g. object detection technology is still usable even in foggy/dim/humid environment) and an improved accuracy of obstacle detection. All in all, "iSee" was successful and we have learnt a lot from it.