Hong Kong Student Science Project Competition 2022
Template of Extended Abstract (Invention)
(Word Limit: 1,000 words, Pages: 2 pages only)

Team Number: SAPE091

Project Title: iRacer

Project Type: Invention

To our best knowledge and after thorough literature research, as at 29 / 6 /2022 , there are / are no[*] **similar works. If there are, the reference links are as below:**

The enhancement our project has made for the existing related products or research is summarized as below:

*Please delete if not applicable. HKSSPC values the originality of works. Students must conduct literature research thoroughly to ensure that their works are unique, and to list relevant reference materials to complement the research or invention.

I.   Background

Due to the epidemic situation in recent years, the public has been paying more and more attention to their personal health, and has been finding ways to reduce their exposure to the virus or increase their immunity through frequently exercising moderately to strengthen their physique. However, the blind are only able to do sports with the assistance of a frontrunner or professional coach, which limits their chance to do sports.

II.   Objectives

We decided to invent a product that can help the blind, hoping to provide them with more opportunities in sports, and simultaneously reduce the burden on the frontrunners, so they can provide help to even more blind runners.

III.   Methodology

The product uses HuskyLens as an AI camera to lead the visually impaired to follow the coach. Our gadget also includes infra-red sensors and ultrasonic sensors to follow a specific path and detect obstacles.

IV.   Design of Invention

The product is a robot which can lead the blind to run. One of the functions of the robot is to lead the blind to run in a specific path. The other function is to locate the position of the coach so that it can follow the coach in order to lead more than one runner at the same time.
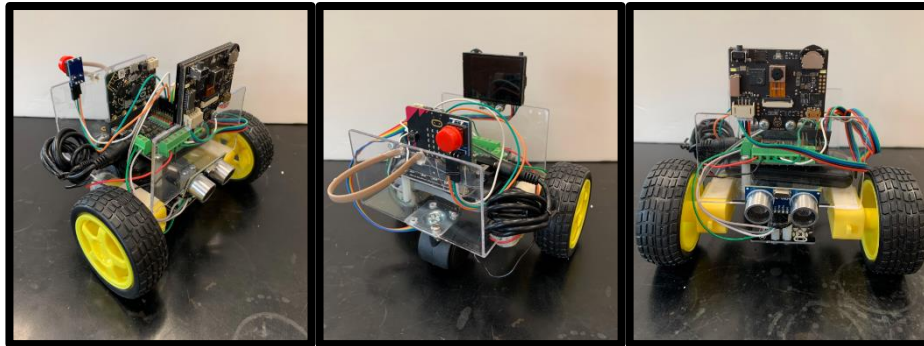
V.   Application / Market Need

iRacer is indeed a practical and convenient product that could assist blind racers in track events greatly. Not only that iRacer could follow lead runners or coaches during training or competitions to guide multiple blind runners at once, it could also act as the lead runner when coaches or lead runners are absent in training so that blind runners could train effectively even without their coach.

VI.   Conclusion

Several trials had been conducted to testify if the idea is applicable. The product can follow a human model and move right behind it. Also, it can accurately follow a dark track.

Based on our experiments, we think this idea can be applied to real-life, hoping that iRacer could be utilized by blind racers in Hong Kong to effectively and efficiently facilitate their training and competitions.

✂ **Our project is developed based on our school's previous project and the enhancement is as below:**