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**Cyber Creepers**

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iStick

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# OVERVIEW

Providing an universal solution for helping the visually impaired people by making their day-to-day activities less-harder.

# OBJECTIVES

1. Navigate the visually impaired people.
2. Sense and decide the path based on static and dynamic obstacles.

# PROBLEM STATEMENT

To develop a smart white-cane ***(iStick),*** that assists the visually impaired people through-out where they are going by detecting all the possible objects that are intervening in their way and navigating them towards a convenient and safe path.

# EXISTING SOLUTION

In the existing smart walking stick, three ultrasonic sensors (left,right,front) are employed to detect the ground-level obstacles. When an ultrasonic wave is transmitted and received by the Ultrasonic sensors and the output is processed the nearby obstacles are detected and alerts the user by buzzer.

# *Drawbacks*

* The object above the ground-level would not be detected and makes it harder for the user to find their way to the destination
* Dynamically moving objects mostly cannot be detected in this model.

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# PROPOSED SOLUTION

***iStick*** has the three ultrasonic sensors along with a camera-module (ESP32) to capture live images and process them to produce the output that makes the outcome more precise

# *How is it Done?*

* Using ESP32 camera-module, the live images are collected and processed using OpenCV to detect any dynamic obstacle above the ground level.
* After collecting data and processing them using OpenCV, the stepper motors are employed to drive them according

# Project Background

Many types of visual impairments like loss of central vision, peripheral vision, blurred vision, gazed vision, night blindness are found common in today’s world. Most of the visually impaired people are found to be dependent on others to assist them for their daily tasks.

Statistics from various sources indicate that only 5-8% of the visually impaired people use white canes, and around 2-5% of them use guide-dogs, while the rest of them uses their partial vision or sight-guides help for their navigation purposes.Guide-dogs not only help its master to move freely but also helps in monitoring the traffic. But when a situation arises where the master needs a new guide-dog, then it takes about 5-6 months (approximately) to train the guide-dog.

It involves a lot of time and also people with blindness may suffer from repudiation, umbrage, inferiority complex, anxiety, depression and similar psychological problems because of their incapacity in comparison to healthy people or due to the feeling of low self-esteem. Our project aims to reduce their mental inferiority by making them believe in themself that they can function on their own without any other human involvement.

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# Expected Impact

Aiming to minimize the third-person dependency for day-to-day tasks in visually impaired people’s life

Expected to boost-up the visually impaired self-confidence, by making them independent of others.

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# Project Details

| **Required Time** | *3 Months (approx)* |
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| **Project Status** | Prototype |
| **Tools needed** | Python , Arduino IDE |
| **Skills needed** | OpenCV, Embedded C |