A

Report on

SMART EYE

A report submitted for the partial fulfillment of the requirements for Mini Project of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted by

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MINI PROJECT

(SMART EYE)

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DESIGN AND DEVELOPMENT OF A SMART EYE WEARABLE FOR THE VISUALLY IMPAIRED

ABSTRACT

Accessibility and mobility are two of the major domains with which the Visually Impaired are still struggling. In the 21st century, where everything is termed "SMART", we are yet to reach the acme where we can solve the above problems for the Visually Impaired. People today live in smart homes where everything in the house is connected to a common network. Voice assistants are becoming common in every house and besides, Wearable Technology has taken off in diverse directions which were once considered impossible. This has led to an overall paradigm shift in how humans interact with technology. In this paper, we propose a prototype of an assistive attachable that would help the Visually Impaired, for navigation and orientation. The device has the state-of-the-art implementation of Artificial Intelligence on the edge, Computer Vision and Neural Networks. It performs Real-time Image Cognition frame by frame using the camera on the device, undergoes pre-processing of the images on the edge device and performs classification on our trained region convolutional neural network (R-CNN). After Image Recognition is successfully performed, the key features of the surroundings are read out into the ears of the Visually Impaired person through audio feedback. It is expected to provide guided navigation, object information about places, products, and services that are present in the vicinity of the user. The results from the data collected and accuracy has been significantly improved with a recognition accuracy of 96%. The proposed smart wearable device has tested in real-time to prove its usefulness for the Visually Impaired