

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY  
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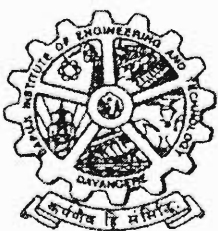
**A REPORT ON PROJECT WORK  
“DIVINE(Device for Visually Impaired for  
Navigating Everywhere)”  
(SPONSORED BY KSCST)**

**Submitted in partial fulfillment of the requirements of the award of the degree of  
BACHELOR OF ENGINEERING  
IN  
INSTRUMENTATION TECHNOLOGY**

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## **ABSTRACT**

One of the most important difficulties faced by the visually challenged persons is constraints in independent mobility and navigation. They primarily use the white cane as a mobility aid allowing them to detect close by obstacles on the ground. The detection of objects above knee height is almost impossible and is a major hindrance for them. Developments in embedded systems have opened up a vast area of research and development for affordable and portable assistive devices for the physically challenged. The main aim of this project is to design and implement a detachable unit which enhances the functionality of the existing white cane by allowing it to detect the knee-above obstacles. This unit consists of an ultrasonic ranger and a vibrator controlled by a microcontroller which offers an increased detection range of 6.45 meters. The distance information is conveyed to the user through non-interfering multi-frequency vibratory stimuli, the frequency of vibration indicating the proximity of obstacles.