

AN ULTRASONIC NAVIGATION SYSTEM FOR BLIND PEOPLE

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ABSTRACT

In this paper is to investigate the development of an aid for blind and visually impaired People. It is a microcontroller with synthetic speech. This aid is portable and gives information to the user about urban walking routes to point out what to make. On the other hand, and in order to overcome navigation difficulties of the blind, an obstacle detection system using ultrasounds and vibrators is added. The proposed system detects the nearest obstacle using a stereoscopic sonar system and sends back the feedback to inform the blind about its position.

words—Handicapped aids, Navigation, Sonar

1. INTRODUCTION

The development and application of technology for navigation and mobility has a long history covering the last period. Although some early endeavors have been made, systems that might replace the cane or dog

length of the cane, typically one pace ahead of the user, have difficulties detecting overhanging obstacles, and difficulties storing in public places [10].

In this paper, the suggested navigation system involves a microcontroller with speech output. It is contained portable electronic unit. It can supply the user with assistance about walking routes by spoken words to point out what decisions to make.

On the other hand, and in order to overcome imperfections of existing electronic travel systems, the proposed method of measuring distance travel system, is to use the acceleration of a moving body. In this case is the blind person. An accelerometer followed by two integrators is used to measure the distance travelled by the blind. This technique is common in inertial navigation systems [11] and suffers from problems caused by the double integration and the accelerometer which are overcome by the use of a footswitch [12]. When this footswitch is closed, the acceleration and the velocity are known to be equal to zero and used to apply a correction.

In addition, to help blind or visually impaired travellers to navigate safely and quickly among obstacles and other hazards faced by blind pedestrians, an