

DECLARATION

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

Difficulty in performing daily tasks in the life of the blind people requires necessary intervention by scientific manners to support and help these people through technology which has become a solution for many problems facing the people at the present time. Such kind of help will open horizons for a better quality of life without reliance on others to perform simple tasks inside or outside their homes, thus increasing their confidence in participating actively in the community. Two related but independent systems have been developed in this thesis: a helmet based system, and a hand based system. The first system is based on ultrasonic sensors and a microcontroller to detect the obstacles around the blind person. The positions of these obstacles are given to the blind person in audio form through a speaker. Thus, the blind person can walk with the help of the designed system and avoid any accidents. The second system consists of a bandage around the wrist of the blind person, and in addition, a pair of ultrasonic sensors is mounted at the frontal position of the bandage. An electronic vibrator mounted inside the bandage increases its intensity when the hand is close to an object. This system helps to position the hand such that the blind person can grab and lift an object. The system has also been attached by a GPS (Global Positioning System) to support the communication system and to determine the location and tracking. This device can be developed programmatically to become more useful and contain more functions in the future.

Keywords: Blind person, ultrasonic system, blind navigation, microcontroller based system, GPS, vibrator

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DEDICATION

My parents : Thank you for your unconditional support with my studies I am honored to have you as my parents . Thank you for given me a chance to prove and improve myself through all my walks of life. Please do not ever change . I love you

My family: thank you for believing in me : for allowing me to further my studies . please do not ever doubt my dedication and love for you

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My brothers and sisters : hoping that with this research I have proven to you that these is no mountain higher as long as God is on our side. Hoping that you will walk again and be able to fulfill your dreams

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