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A Project Report on  
**“ANDROID BASED INTEGRATED INDOOR NAVIGATION SYSTEM  
FOR VISUALLY IMPAIRED PEOPLE”**

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# ABSTRACT

Navigation in indoor environments is highly challenging for the severely visually impaired, particularly in spaces visited for the first time. Several solutions have been proposed to deal with this challenge. Although some of them have shown to be useful in real scenarios, they involve an important deployment effort or use artifacts that are not natural for blind users. This project presents an indoor navigation system that was designed taking into consideration usability as the quality requirement to be maximized. This solution enables one to identify the position of a person and calculates the velocity and direction of his movements. Using this information, the system determines the user's trajectory, locates possible obstacles in that route, and offers navigation information to the user.

People with visual disabilities, i.e., partially or totally blind, are often challenged by places that are not designed for their special condition. Examples of these places are bus and train terminals, public offices, hospitals, educational buildings, and shopping malls. Several everyday objects that are present in most built environments become real obstacles for blind people, even putting at risk their physical integrity. Simple objects such as chairs, tables and stairs, hinder their movements and can often cause serious accidents.

Several proposals have tried to address this challenge in indoor and outdoor environments. However most of them have limitations, since this challenge involves many issues (e.g., accuracy, coverage, usability and interoperability) that are not easy to address with the current technology. Therefore, this can still be considered an open problem.

This project presents a prototype of a navigation system that helps the visually impaired to move within indoor environments. The system designed has been focused on usability of the solution, and also on its suitability for deployment in several built areas.