JustStep: Voice Message System for Tactile Ground Surface Indicator (TGSI)

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The project "JustStep: Voice message system for tactile ground surface indicator (TGSI)" is an Assistive Technology tool that aims to solve the difficulties faced by blind people in order to orientate themselves in interiors, such as in educational institutions. The planned solution was the development of a voice message system that indicates the exact location of the blind person when walking on the warning tactile ground surface, which ensures them greater safety and autonomy while walking around. The elaboration of the system has two parts: the construction of the detection system that identifies when the blind person walks on it and the audio system to reproduce the voice messages. In the detection system, different possibilities of sensors were evaluated; for the audio system, it was necessary to evaluate the different alternatives and which one better fits an indoor environment. Wireless Technologies such as WiFi, Bluetooth and radio frequency were tested for communication between both systems. The results show that the most efficient detection system attached to the warning TGSI was the one I made using four push buttons so that they trigger the voice message corresponding to the specific location. I also developed the playback of audio files from SD card, by decoding bits, from the Arduino PWM output connected to an earphone. The wireless alternative chosen was radio frequency, because its range is the most suitable to the requirements of this project. The project objectives were reached, resulting in the JustStep, a prototype with great potential for application in educational institutions and other indoor environments such as shopping malls and museums, due to its efficiency and cost-benefit.

Awards Won: