Active Shooter Security System

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In the United States, 1,346 active shooter incidents were reported since 2013, resulting in 442 deaths and 953 injured (Everytown 2024). Active shooter is defined as an individual actively engaged in killing or attempting to kill people in a confined and populated area (FBI, 2013). The purpose of this research was to develop an automated system that identifies the sound of gunshots and activate safety measures, such as closing doors, to protect people in the event of an active shooter. The problem addressed was the lack of an efficient and automated system to respond to these threats in public places, especially in educational centers. The hypothesis proposed that a sound sensor connected to a microcontroller could detect gunshots based on their decibel level and activate a security protocol. The project included tests at the Puerto Rico Police Range, where gunshots sounds were recorded in open and closed environments. The data collected showed that the gunshots reached sound levels above 130 dB. Based on this data, a prototype was designed using a decibel meter, an Arduino microcontroller, and servomotors, that were programmed to automatically close the doors upon detecting the gunshot sound level. The tests confirmed the system's accuracy in detecting sounds within the decibel range and activating the planned safety measures. It was concluded that the implementation of this system is feasible and can be adapted to different public spaces.

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