Smart Caretaker: A Health Band to Assist in the Care of Alzheimer's Patients

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Alzheimer's disease is a destructive neurodegenerative disease that affects cognitive function as well as visuospatial and executive function. The chances of injury are heightened, and the patient relies increasingly on a caregiver as the disease progresses. It has been decided that a patient monitoring system must be developed to reassure the caregiver by assuring the safety of the patient. Monitoring systems are available on the market but buying these can be expensive, time-consuming, and insufficient. The goal for this project was to design and construct a prototype using an Arduino microcontroller to monitor patients constantly and send alerts to the caregiver if a problem presents itself. The ideal functions of this device included measuring temperature and alerting the caregiver if it was worrisome, alerting the caregiver if the sound sensor detected a high level of sound or if the accelerometer detected a fall. The prototype was designed, built, and rebuilt until it met or exceeded the engineering goals. The device's sensors met or exceeded the threshold of 80% accuracy. The device has sufficiently performed in all key aspects, namely temperature measurement, sound detection, and fall detection. Additionally, it is able to contact the caregiver through an app that can be installed on their smartphone. The Smart Caretaker is an easy to use, low-cost device that can be produced commercially and will affect both patients and families greatly.

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