Guardian

Indoor localization system for elderly people

What are we doing?

Guardian is a bracelet that comes with a mobile, desktop, and web application for easy localization of elderly people with fall detection as an additional feature.

Why?

Based on environmental scanning, the demand for Guardian is crucial to fulfilling the need for monitoring the inflating number of older people who need support, due to the lack of younger people who can provide it. Consequently, balancing the current social security system in the country.

By whom?

As a project, it was a multidisciplinary effort done as collaborative work between software engineers, embedded engineers, and entrepreneurs, all together serving to monitor the elder.

How?

Using wireless sensor networks (ESP Wi-Fi module), it:

- Recognizes surrounding Wi-Fi.
- Get their strengths.
- Send this data to the server.
- The server converts strength to distance by a certain algorithm; our algorithm model is KNN. K-nearest neighbor algorithm is a simple, easy-to-implement supervised machine learning algorithm that can be used to solve both classification and regression problems. So we use that classifier to put the distances into categories using the probabilities and train concept and if we add a new input location (mean that the elderly who is wearing the devices is now in a new location) classify it to a specific location, through that we can know their location.
- Location is detected from distances and shown on the client-side.