Davide Frigerio 10664157
Walter Catalfamo 10608233

Smart Bracelets

Introduction

The project goal is to implement a smart bracelet worn by a child and their parent. The bracelet keeps track of the child location and allows the parent to be sure that the child is not falling.

How it works

Pairing Mode	Couple child and parent bracelets
Operation Mode	The parent reads the messages coming from their child
Alert Mode	If the child is FALLING, the bracelet sends a FALL alarm with the location of the child. If the parent bracelet does not receive any message for a minute, it sends a MISSING message with the last received location

Message Data Structure

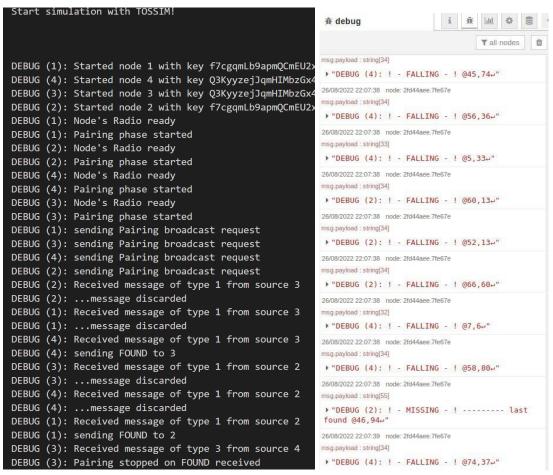| Type	Type of message
Key	Pairing key
Source	Source of the message
Dest	Destination of the message
Status	Status of the child
x	x coordinate of the child
y	y coordinate of the child

Alarm Structure

DEBUG (4): ! - FALLING - ! @58,80

DEBUG (2): ! - MISSING - ! --------- last found @46,94

The alarms are structured in such a way that the parent knows the last location of the child.

Simulation

It is possible to simulate the project with Tossim and Node-Red. This version uses virtual serial ports created with socat (/dev/pts/2 and /dev/pts/3) to transmit alarm messages. A log file is attached in the main folder of the project.

Tossim

Node-Red

Source Code

https://github.com/walter-catalfamo/smart_bracelets