IntelChair

students @deti 2019

Projeto em Engenharia Informática, 3º ano, MIECT.

Abstract

IntelChair consists of a motorized wheelchair that can autonomously move itself in a known environment, giving the user the ability of hands free mobility while sitting in the chair.

In many working environments, a person may need to do short travels between locations a lot of times during the day. While doing so, it wastes time, focus and energy.

In that sense comes the IntelChair, a motorized wheelchair packed with sensors and a computer, that takes care of transporting people from location to location, without its user ever need to pay attention to the course of the dislocation.

Fig 2 - Our wheelchair with all it's sensors.

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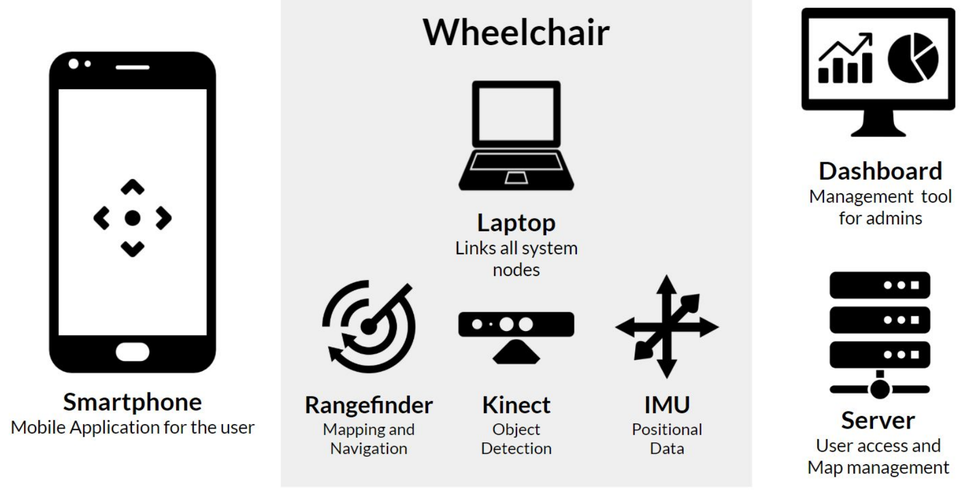

Fig 1- High level architecture of our system

Main Features

- **Manual Control**
  Manual control of the wheelchair through a virtual joystick in the mobile application.

- **Room Mapping**
  Generate a map of a closed environment using the wheelchair's sensors.

- **Autonomous Navigation**
  Have the wheelchair travel autonomously to a location chosen by the user.

- **Administration Dashboard**
  System dashboard to manage users, wheelchairs and maps.

Extra Features

- **Voice Control**
  Control the application functions through voice commands.

- **Follow User**
  Have the wheelchair recognize and follow the user.

- **Object Avoidance**
  When navigating, avoid objects that were not previously mapped.

We created an artificial scenario at IRIS Lab to run most of our tests, as seen in the picture below.

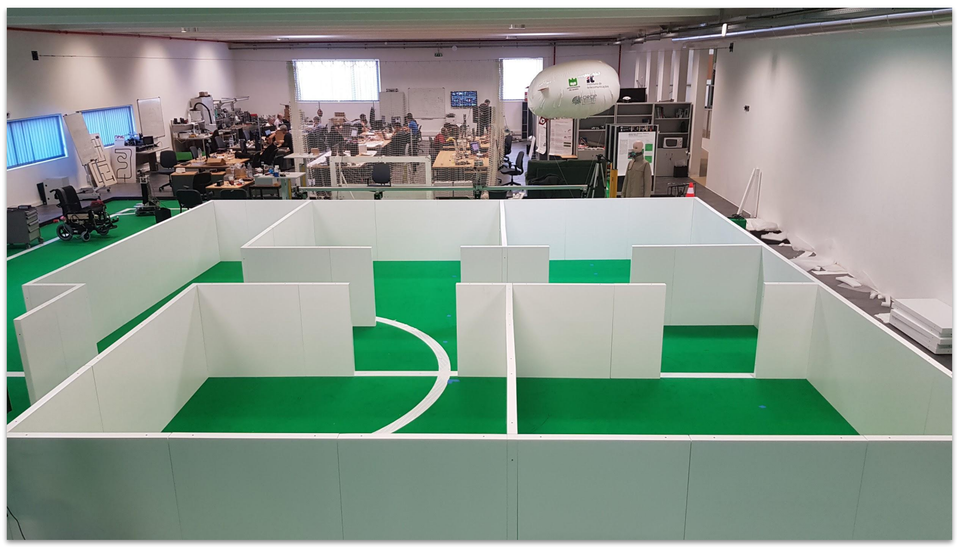

Fig 3 - Testing environment for our wheelchair

Technologies

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