2D Map generating Bot

Team Members :
Racherla Prabhat
Pratik Kapasi
Aditya Karnam

Abstract:

The vision behind this project is to map an unknown environment into our systems, where physical human access is not feasible.

We will use IoT based 6LowPAN protocol for robot communication systems which will be controlled remotely over the Internet. The robot consists of various sensors such as: Gyro,Accelerometer,Depth Sensor and Camera on board to sense the environment and give us a 2D sketch of it.

On board with Raspberry Pi/Arduino to processing the sensor data and camera streaming through IoT protocol will be the major work of the project.

In real time, when this project will be used, the bot will be first sent into the building to get a basic layout of it. Then humans will enter. They can decide which paths they should take and avoid for possible dangers.

For example, assume a building is attacked by terrorist, and army people have no knowledge of the blueprint of the building. So they can send this bot surreptitiously, get a basic blueprint, then plan a rescue operation on the basis of it.

There are plenty of other application as such.

Components:

Raspberry Pi with IPv6 enabled
Pi Camera
Robot (ready to be assembled chassis)
GPS Sensor
LUDAR/SONAR Sensor
Distance Sensor/Obstacle Sensor
WiFi Module

References:

Socket Programming in Python.

Enable IPv6 on Raspberry Pi
http://weblog.aklmedia.nl/2013/10/enable-ipv6-on-the-raspberry-pi/

Video Transmission using PyCamera.
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TKinter GUI for our Application.
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Robot Localization Techniques :
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