Simultaneous Localization and Mapping in Python for RF-Denied Environments

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Simultaneous Localization And Mapping

Where am I? What obstacles are in my way?
Radio Frequency denied environments
Ordinary Environment
RF-Denied Environments
... in Python

- Most popular programming language at top liberal-arts colleges
- Lots of free packages for useful stuff like sensors, networking
- Easy to learn and in-demand skill
- As of summer 2013, no SLAM solutions in Python
SIMULTANEOUS LOCALIZATION AND MAPPING IN PYTHON - YouTube

This video shows an example of what you can do with BreezySLAM, our new Python package for Simultaneous Localization and Mapping...

BreezySLAM

This zip file contains everything you need to start working with Lidar-based SLAM in Python or C++. BreezySLAM works with Python 2 and 3 and on Windows, Linux, and Mac.

SLAM Lectures - YouTube

Course on simultaneous localization and mapping. All algorithms are programmed in Python. Python sources are here: http://www.clausbrenner.de/slam.html.

OpenSLAM.org

The simultaneous localization and mapping (SLAM) problem has been intensively studied in the robotics community in the past. Different techniques have been...

SLAM lecture - Claus Brenner

Jan 31, 2014 - Exercises are programmed in Python, and you'll find all required code snippets and data in the list below. Note that the zip files for the units are...

gpcz/python-drexel-slam - GitHub

python-drexel-slam - Drexel University public SLAM example written in Python.
Demo #1: SLAM over WiFi on a Wheeled Vehicle
Neato XV11 vacuum robot

- Raspberry Pi Computer (ARM v6; $35)
- WiFi adapter
- Battery
- Lidar
- Neato XV11 vacuum robot
Challenge #1: SLAM On-board

1) MAV released into building
2) Flies around, building map from SLAM
3) Uses position from SLAM to navigate back to starting point
4) Operator removes SD card and views map in tablet.
BeagleBone Black ARMv7 Cortex A-8 NEON SIMD
$55
ODROID U3 ARMv7 Cortex A-9 NEON / Quad Core $65
Challenge #2: Develop Software Without Crashing

3DR Iris MAV
$800

Hokuyo URG-04LX Lidar
$1125
Demo #2: PyQuadSim
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