CSCI 455

Robotics

Syllabus

Instructor

Hunter Lloyd
EPS 354
looneytherobot@gmail.com
Office hours: https://www.cs.montana.edu/office-hours.html
Lab Room : Barnhard 109
Combination to the room will be given out later in the semester

Objectives:

- To design, develop and complete robotic activities and challenges
- Complete Robotics Software Design
- Write software to manipulate servos and motors for robot control.
- Understand the mathematical foundations of robot path planning.
- Autonomous Robot Behavior
- Making robots make intelligent decisions based on sensor input
- Understanding and manipulation of 3D video data

Books you will need for this class

- No Texts
- We will be using a lot of papers and online resources for the class.

Grading

- Projects/Homework 50% of final grade
- Final Project 30% of final grade
- Quiz one 10%, Quiz two 10% of final grade

Programming Languages we will use:

- Linux scripting
- C++
- Python
- Java for Android

Tools we will USE:

- **Webots – Virtual roboticcs**
- **TangoBots**
    - Raspberry Pi
    - Pololu Motor controllers
    - Maestro Servo Controllers
    - Tango Android Phones
    - Cross-Compiling
    - Android Studio
    - Python Idle

Topics Covered

- Motor Controllers
- Servo Controllers
- Serial interfaces
- Special purpose pins
- Android programming
- Threading
- GUIs
- Networking

- USB interfacing
- Path Planning
- Learning algorithms
- Speech and Dialog patterns
- Humanoids
- 3D Cameras

Assignments

1. Virtual Robots
2. Maze algorithms
3. Text to Speech/Speech recognition
4. Dialog engine
5. GUI interface control
6. Autonomous Robot behavior