Cpt_S 483: Introduction to Robotics
Dana 3

- RoboSub
- Robot Club
- Research Lab
Current or Proposed Robot Research

- UAVs for Bird Deterrence
- Human Perceptions of UAVs
- Humans Teaching Robots
  [https://www.youtube.com/watch?v=fqpFKUeZiQU](https://www.youtube.com/watch?v=fqpFKUeZiQU)
- Learning to Correct for Imperfections
• Born: VT
• Raised: NH
• High school: CT
• College: MA
• Worked: WI
• Grad School: TX
• Postdoc: CA
• Prof.: PA
• NOW: WA

Research Interests: intelligent agents, multi-agent systems, machine learning, robotics
Who are you?

• What do you want to get out of this course?
Autonomous Mobile Robotics

- EE (Sensors, Actuators)
- ME (Control of Quadcopters)
- CS (AI)

- Manufacturing
- Teleoperation
- Agriculture

- PR2
(Some) Topics

ROS
Sensors and Vision
Locomotion, Kinematics, and Maneuverability
Localization and Mapping
Planning and Navigation
Robot Learning
Multi-robot coordination
• Goals of Course
  – General Knowledge
  – Simulation vs. Physical
  – Final Project

• Course Web Page
  – http://www.eecs.wsu.edu/~taylorm/16_483F/index.html
  – Piazza
  – Blackboard

• Syllabus
• Textbooks
• Office hours
• Linux: 14.04 LTS
• ROS: Indigo
  – http://wiki.ros.org/indigo/Installation
TurtleBot 2

- Open source hardware and software
- Kobuki base (formerly Create by iRobot)
  - 25.6 in/s, 180 deg/s
  - 3 forward bump sensors
  - 3 cliff sensors
  - 2 wheel drop sensors (picked up / stuck)
  - Odometry: 11.7 ticks / mm, 2578 ticks / wheel rev
- Kinect Sensor: RGBD, can simulate laser
  - 540x480px, 30fps
  - Depth: 0.5-4.0m
- Onboard gyroscope
- Netbook
Parrot ARDrone 2

– HD Video (720p, 30fps, 92deg.)
– 3-axis gyroscope: orientation
– 3-axis accelerometer: measure acceleration movements
– 3-axis magnetometer: compass
– Pressure sensor: vertical stability at height
– Ultrasound sensors: ground altitude measurement
– 60fps 320x240 camera: downward pictures & speed measurement
– 28,500 RMP motors
• (Great) Expectations
  – Motivation (Robots are Awesome)
  – Robots are Awful
  – Looking up info

• Course Languages
• Linux
• **ALWAYS** work
• Even for **photography**

• **Cheetah**
• **Big Dog**