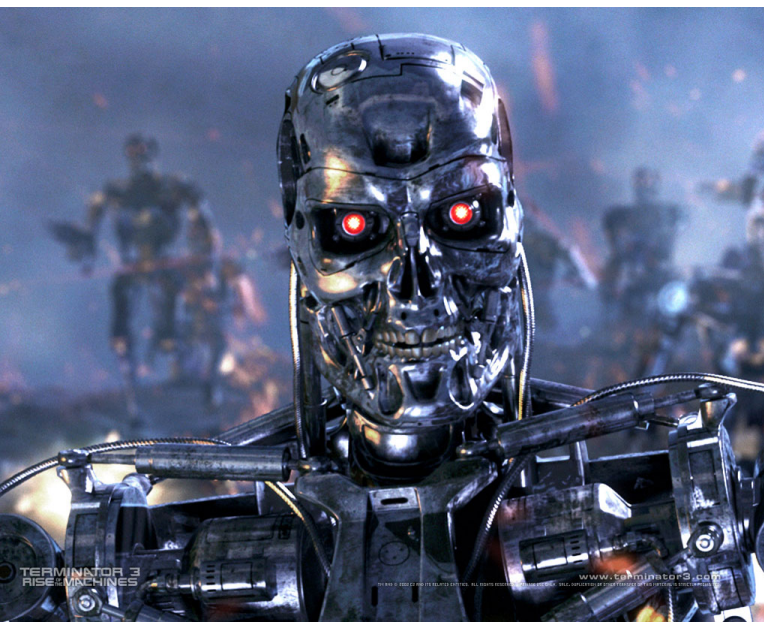# Cpt_S 483: Introduction to Robotics

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

- 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](#)