Robot Assisted Tours

NaviBot Systems

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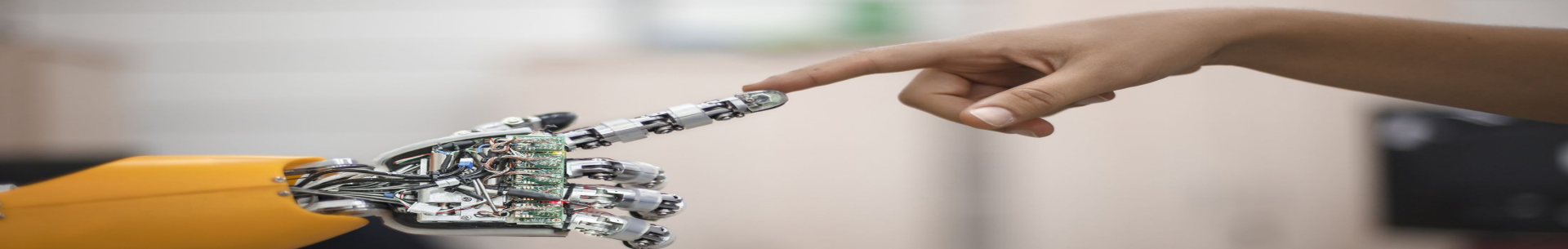
Sponsor: Michael Leverington
Mentor: Gerald Nowak

Why This Project is Important

Client: Michael Leverington

- Computer Science Professor at Northern Arizona University
- *"…I wanted my own robot."* - Leverington 2019
- Good Recruitment tool for NAU
  - Attracts CS, EE and engineering students in general
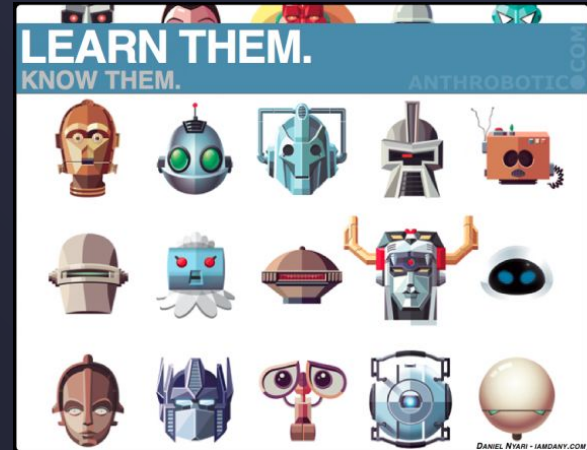- Potential tool for teaching robotics in the future

Project History

Last Year's Team

- Built RAT from the ground up
- RAT can move around with direct human input

Tools

- XBOX Kinect
- Wheel counters
- Raspberry Pi
- Arduino
- ROS (Robot Operating System)
- XBOX controller

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Our Main Tasks:

GUI
- Create a GUI in which users can track RAT's movements

Navigation
- RAT must navigate on his own
- Take orders from user (i.e. go to Room 120)

Mapping
- We need to create a map of the engineering building
  - We could create the map ourselves
  - Program RAT to create his own map

Future of the Thirty Gallon Robot

Tours of Engineering Building
- Take visitors around EGR
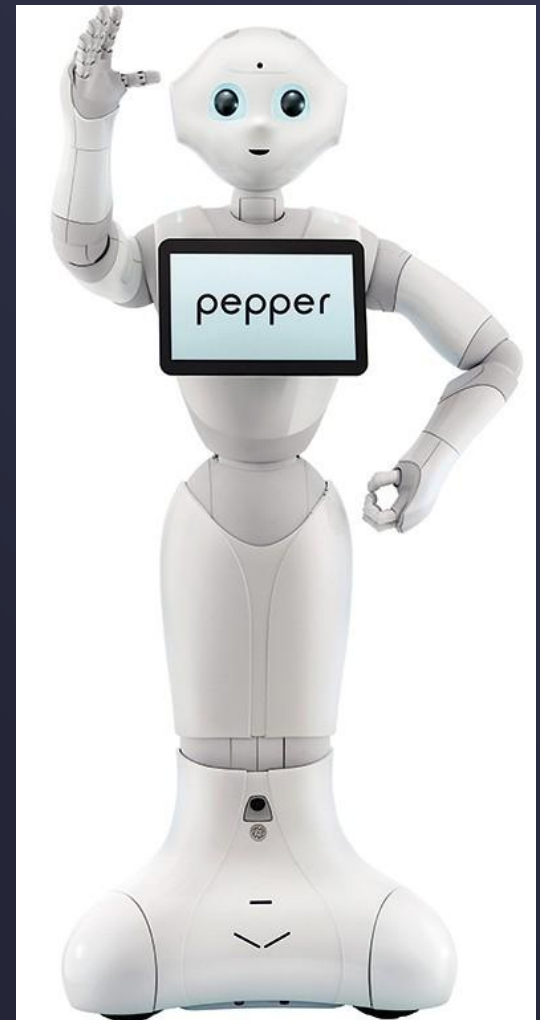- Provide facts about certain rooms

Computer Vision
- (i.e. reading room numbers)

Robot Redesign
- Sleeker look

Further projects based on Professor requests
- Machine Learning
- Recorded voice lines
- Answers to FAQs
- Monitor/UI

What We'll be Researching:

Minerva
- Robot that gave tours of the Smithsonian

ROS
- Navigation Packages
- Mapping Packages
- Kinect Packages

Sensors
- Sensors that will help with Navigation and Mapping
  - Lidar
  - Ultrasonic
  - Better rgb-d sensors

Minerva the Robot at the Smithsonian

Thank You!