

# academic robotics and practical robotics

- Venn diagram and discussion of academic robotics and practical robotics
  - Be aware of the incentives and motivations of the creators
  - Beware of videos
    - How many attempts were made? Is this 1 of 1, 1 of 10, 1 of 100, 1 of 1000, ...
    - What happens if the scenario is changed a little? What variations can the system handle?
    - Was the video altered?
      - Has it been cut?
      - Has it been sped up?
    - Is it autonomous, semi-autonomous, eyes-off teleoperated, eyes-on teleoperated, operated by an expert, operated by a naive user, etc.
  - Systems are difficult to test and many don't have the incentives to break their own work
  - Something similar to "Give me 10 minutes with your robot, and I'll break it." - Henrik Christensen
  - "If all you have is a hammer, everything looks like a nail." -  
[https://en.wiktionary.org/wiki/if\\_all\\_you\\_have\\_is\\_a\\_hammer\\_everything\\_looks\\_like\\_a\\_nail](https://en.wiktionary.org/wiki/if_all_you_have_is_a_hammer_everything_looks_like_a_nail)

# Brain Architectures

- Sense-> Plan -> Act vs. Subsumption Architecture
  - Behaviors
    - Wall following
    - Move until contact
  - “All models are wrong, but some are useful.” - George Box
  - “The world is its own best model.” - Rod Brooks
  - Layered architectures
    - Biological relationship
      - Spinal level control in humans
      - Language as a layer for humans on top of other animal capabilities
      - Evolution of the neocortex
    - Mapping and self-driving cars
  - End-to-end depends on what’s at the ends.
    - The robot’s body is hugely important (Roomba example)
    - Actuators and control
    - Sensors, such as RGB cameras designed based on what evolution discovered to work well for the human visual system

Advice for lab members (didn't cover but might be good for the future)

[http://hrl-wiki.gatech.edu/hrl-wiki/index.php?title=Pithy\\_Advice\\_for\\_Lab\\_Members](http://hrl-wiki.gatech.edu/hrl-wiki/index.php?title=Pithy_Advice_for_Lab_Members)

# Topics of Interest that Were Mentioned

- Practical RL (implementation, Jupyter notebook, deep dive Assistive Gym)
- Control methods other than RL
- Roomba
- Startup
- Sensors (cameras, haptic, capacitive)
- Soft robotics