Grand Challenges: Manipulation for Human Environments

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Overview

• Putting it all together

• Three sessions
  – Platform design
    • Custom, off-the-shelf, compliance, robustness, form factors, legs, wheels, dynamic wheeled platforms
  – Learning
    • Grasping
    • Exploration, teleoperation, simulation
  – Task execution
    • Revolution for the workers (give them robots!)
    • Everyday tasks (getting a drink from a fridge)
    • Controller refinement for move-to-grasp
#1

- preparing and delivering an order at a burger joint
  - full menu, multiple restaurants, custom burgers
  - tool use
  - unstructured & dynamic environment
  - manufacturing
#2

- A disordered house to an ordered house (reverse entropy, creating beauty)
  - household chore, home environment
  - finding objects, fetching objects, placing objects
  - navigation
#3

- Build a habitat
  - Collaborative construction
  - Pitch a tent together
  - Working closely with a person
  - Teaching
  - Robot tool use