



**Massachusetts  
Institute of  
Technology**



Life Tomorrow



**CSAIL**

MIT COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE LABORATORY



# Collaborating with The Boston Home

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# Our Motivation



**How can technology help wheelchair users:**

- **have greater levels of mobility?**
- **face fewer barriers to participation?**
- **enjoy a greater quality of life?**

# Our Approach



- **Work closely with The Boston Home to understand the residents' realities, lives, and goals of residents**



- **Leverage our expertise in robotics, technology and aging, and artificial intelligence**

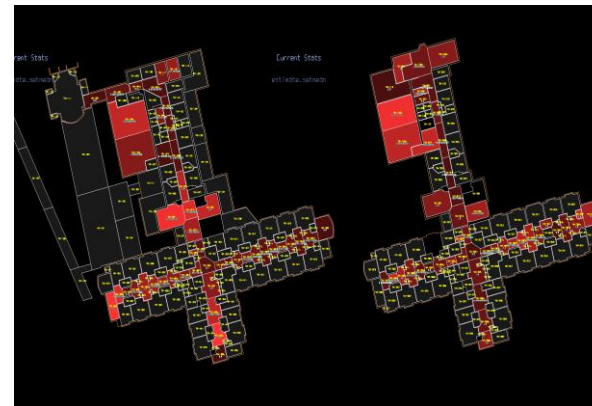


# What are we working on?



voice-  
commandable  
robotic  
wheelchair

understanding  
mobility patterns



providing wheelchair-based  
information/communication tools



# A Voice-Commandable Robotic Wheelchair: Vision



- **Navigation, information, and communication capabilities**
- **Natural-language commands**
  - “Take me to the dining room.”
  - “Follow me.”
  - “What’s for lunch today?”
- **Easily introduced to new environments**
  - Caregiver/wheelchair user can give a narrated guide tour

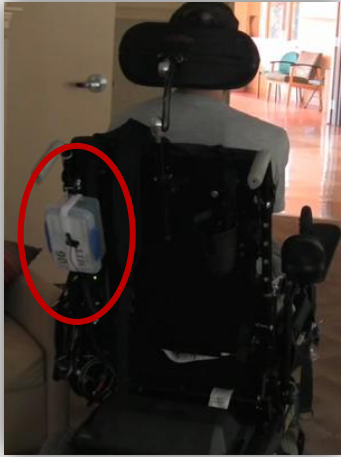


# Demonstration



- **Tour guide**
  - Algorithms that allow the wheelchair to follow a person autonomously
- **Providing information through speech interaction**
  - Automatic speech recognition

# Principles of Our Work



- **Need-inspired and people-centered research**
- **Participation and advice from residents and staff at The Boston Home**
- **Short-, medium-, and long-term research challenges and goals**
- **Multi-disciplinary effort**



# Our Team – Thank You!



## Residents and staff at The Boston Home

### MIT:

Professor Nicholas Roy, CSAIL (Project Lead)

Professor Seth Teller, CSAIL

Dr. Bryan Reimer, AgeLab

Graduate Students:

Yoni Battat, Finale Doshi, Sachi Hemachandra,  
William Li, Jun-geun Park, Javier Velez



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