

# Customizing Semi-Autonomous Nursing Robots using Human Expertise

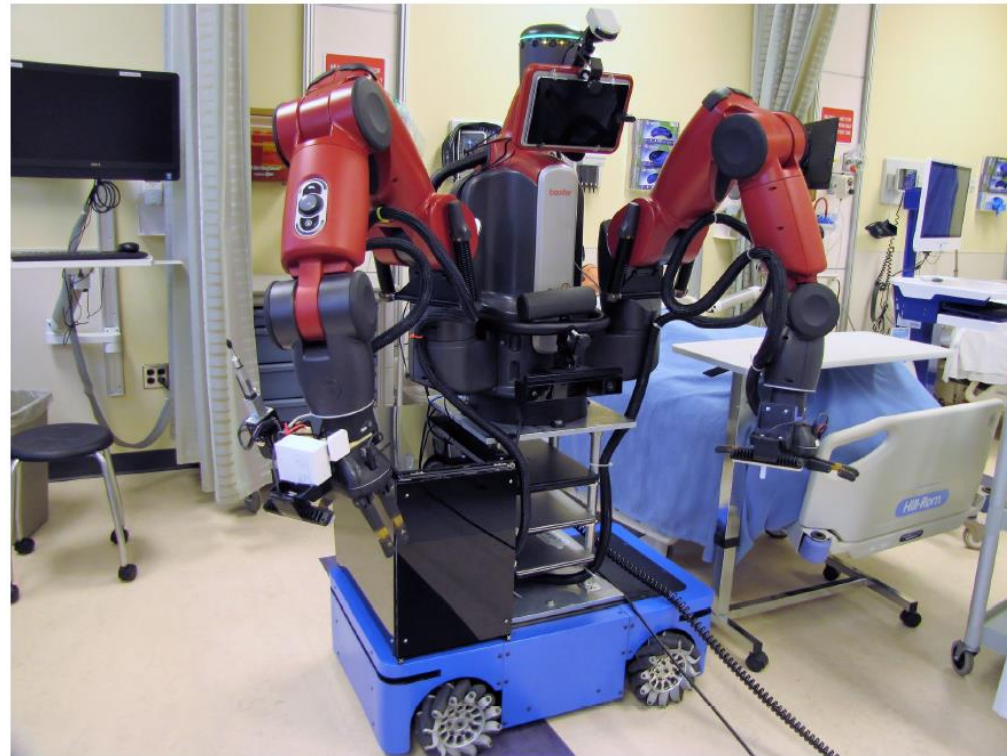
NRI #1830366

Kris Hauser (PI)

Department of Computer Science  
Department of Electrical and Computer Engineering  
University of Illinois at Urbana-Champaign

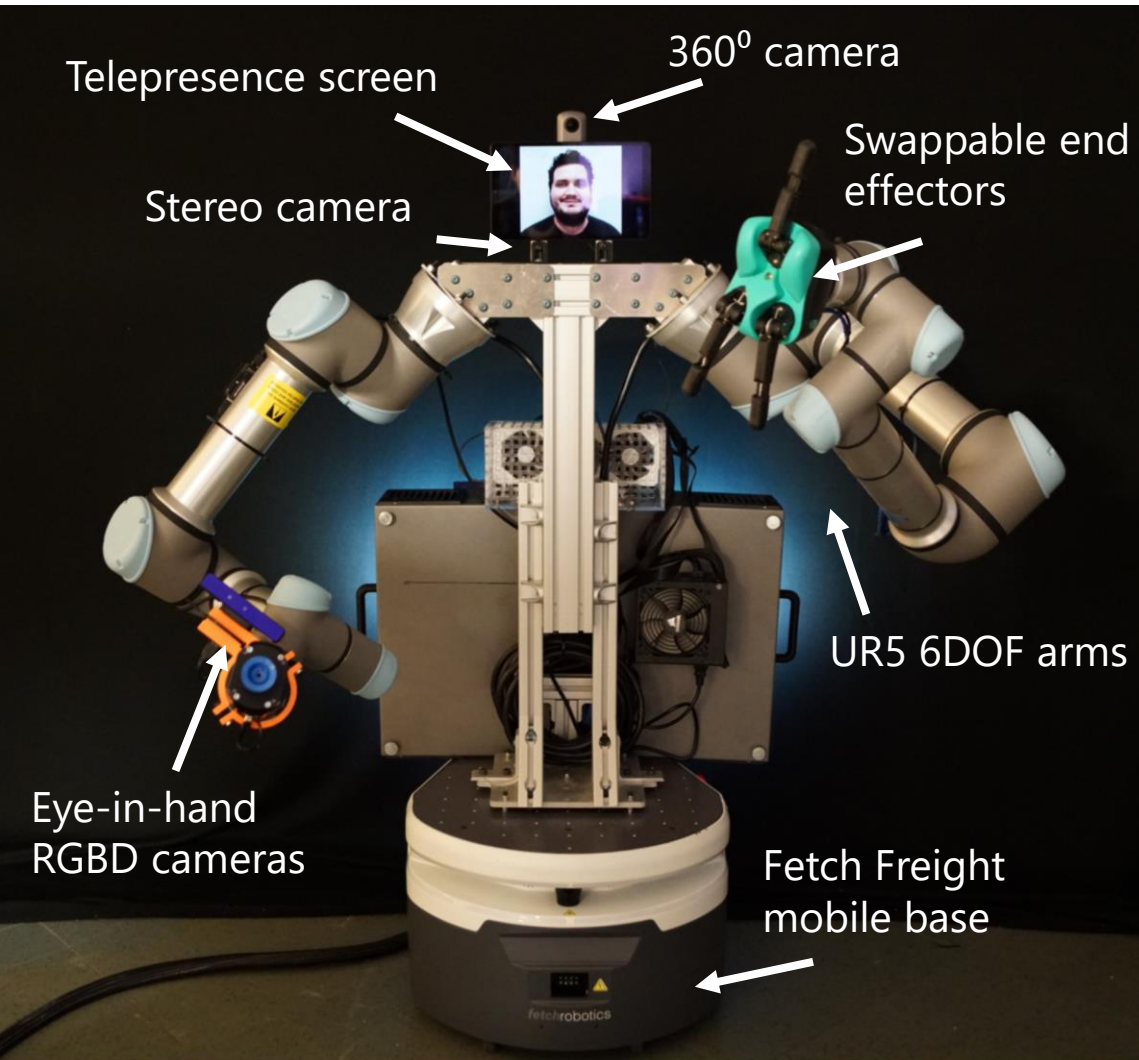
Ryan Shaw (Co-PI)

Department of Nursing  
Duke University



# Current Progress

- TRINA 2.0 hardware



## Perception and autonomy primitives



- Autonomous button pressing
- Point-and-click navigation
- Point-and-click pick-and-place



Engaging undergraduates  
in research



# UV Disinfection Planning

Status quo: “tower” disinfection, heuristic paths

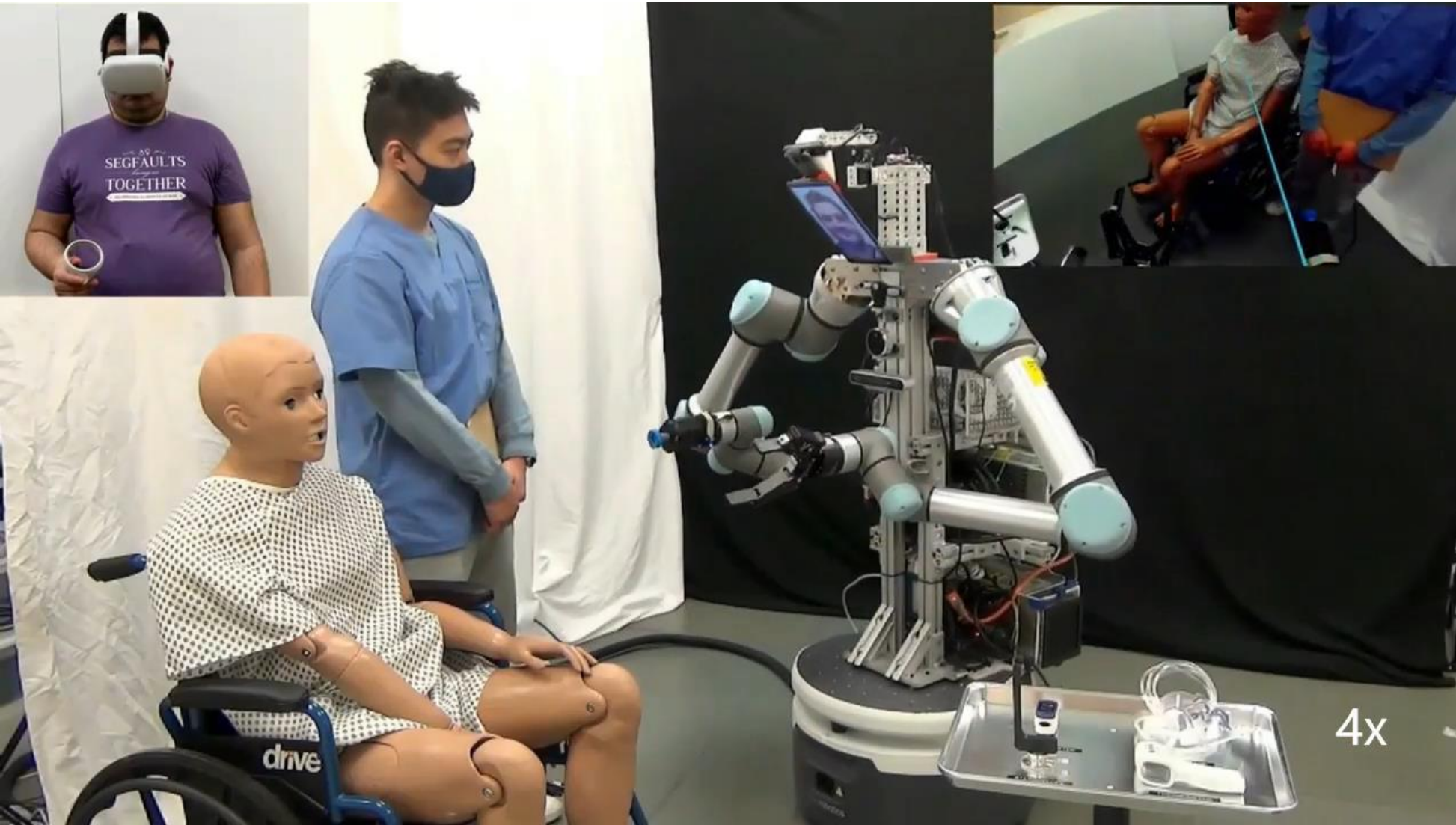
Optimized: arm-mounted lamp, novel coverage algorithm

66.7% coverage @ 99.99% disinfection, 30 minutes

82.3% coverage @ 99.99% disinfection, 30 minutes



# Medical Consultation Scenario



Patient consultation  
with remote doctor

TRINA capabilities  
demonstrated

- Operator/recipient communication
- Navigation
- Fine manipulation with motion scaling
- Bimanual manipulation
- Handover
- Visual inspection
- Stereo vision
- Head movement tracking

# Next up

- User studies with Registered Nurses @ Duke
- Intelligent user interfaces with intent prediction
- Tests of smart UI with nursing students
- ANA Avatar XPRIZE Semifinals