Robotic Grasping and Manipulation Competition @ IROS2017

Yu Sun

9/28/2017

Organizing Committee

- Yu Sun, University of South Florida
- Zoe Doulgeri, Aristotle University of Thessaloniki
- Erik D. Engeberg, Florida Atlantic University
- Joseph Falco, NIST
- Yunjiang Lou, Haerbin Institute of Technology at Shenzhen
- Hyungpil Moon, SungKyunKwan University
- Maximo Roa, DLR
- Yasuyoshi Yokokohji, Kobe University


EXIT

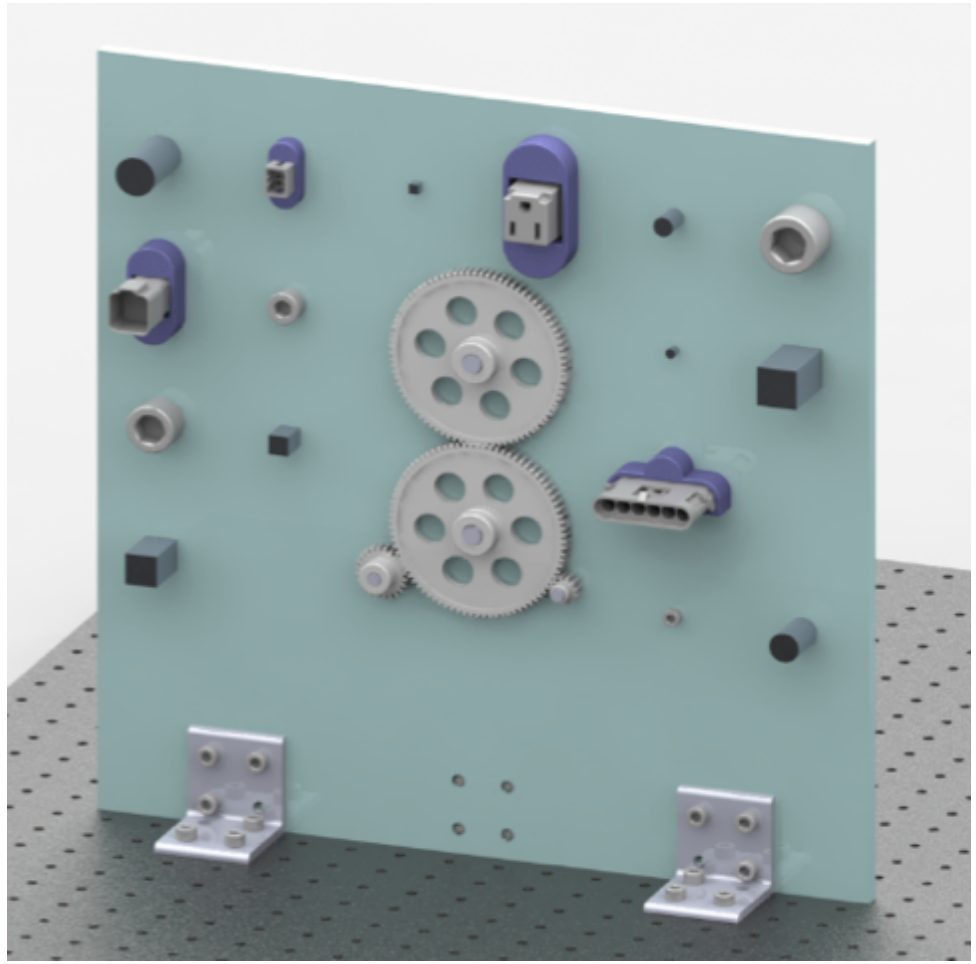
Tracks

- Service Robotics Track
  - Ten daily-living tasks:
  - 120 minutes to complete all tasks
  - Total 235 points
- Manufacturing Track
  - Two tasks
  - 120 minutes to complete both
  - Total 600 points (No counting bonus points)

- Transfer a cup on its saucer
- Arrange silverware
- Stir water in a cup
- Pour water into a cup
- Plug into a socket
- Tear away one piece of paper towel
- Play sorting board
- Hammer a nail
- Transfer straw into a to-go cup with lid
- Open a bottle with a locking safety cap

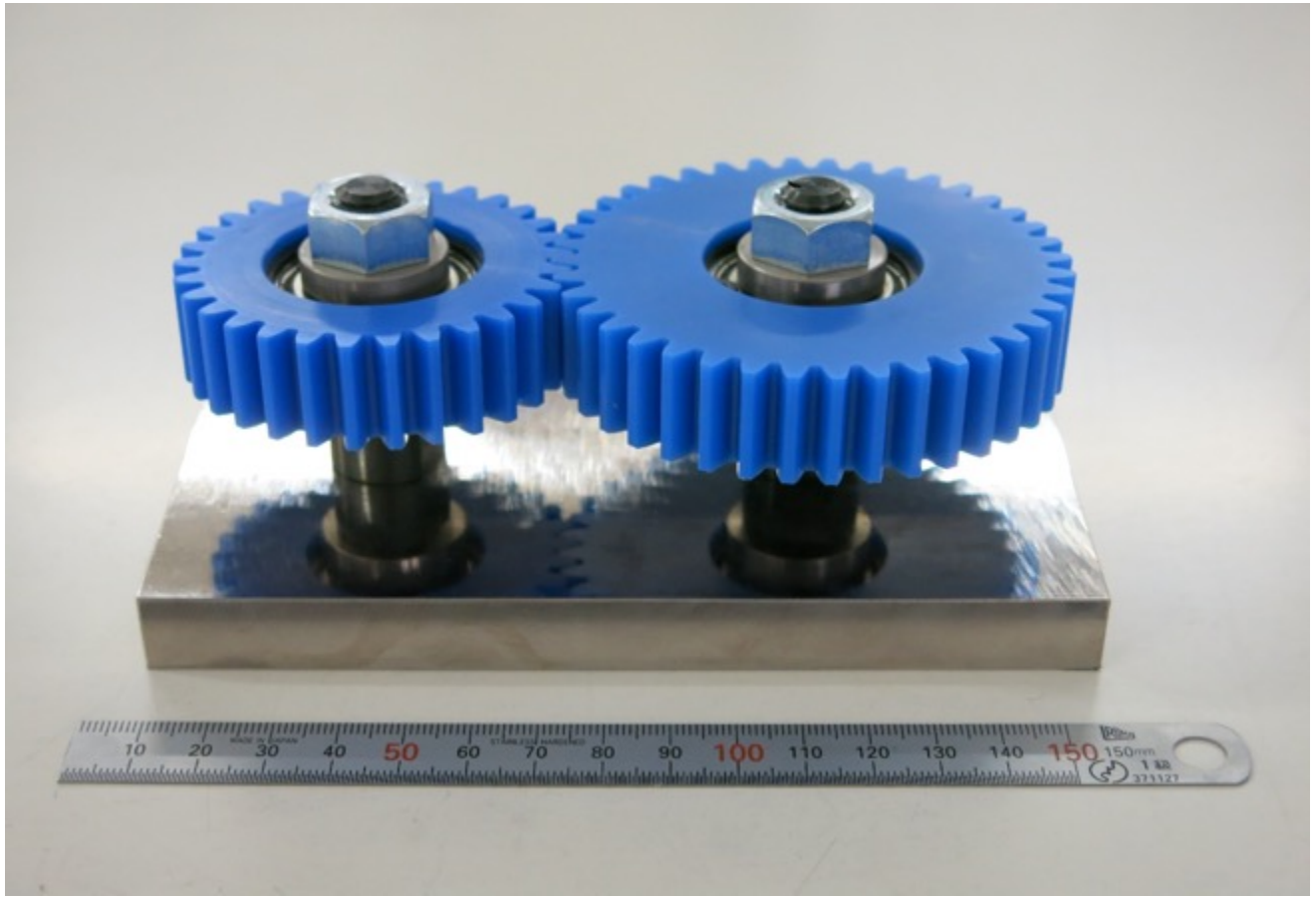
Manufacturing Task Board

- Put and remove
  - screws, gears, pegs, and male connectors
- On and from the board
- CAD models are provided



Assemble Gear Unit

- Parts:
  - One base plate
  - Two roller bolts
  - Two collars
  - Two different sized spur gears (bearing built-in type)
  - Two washers
  - Two nuts



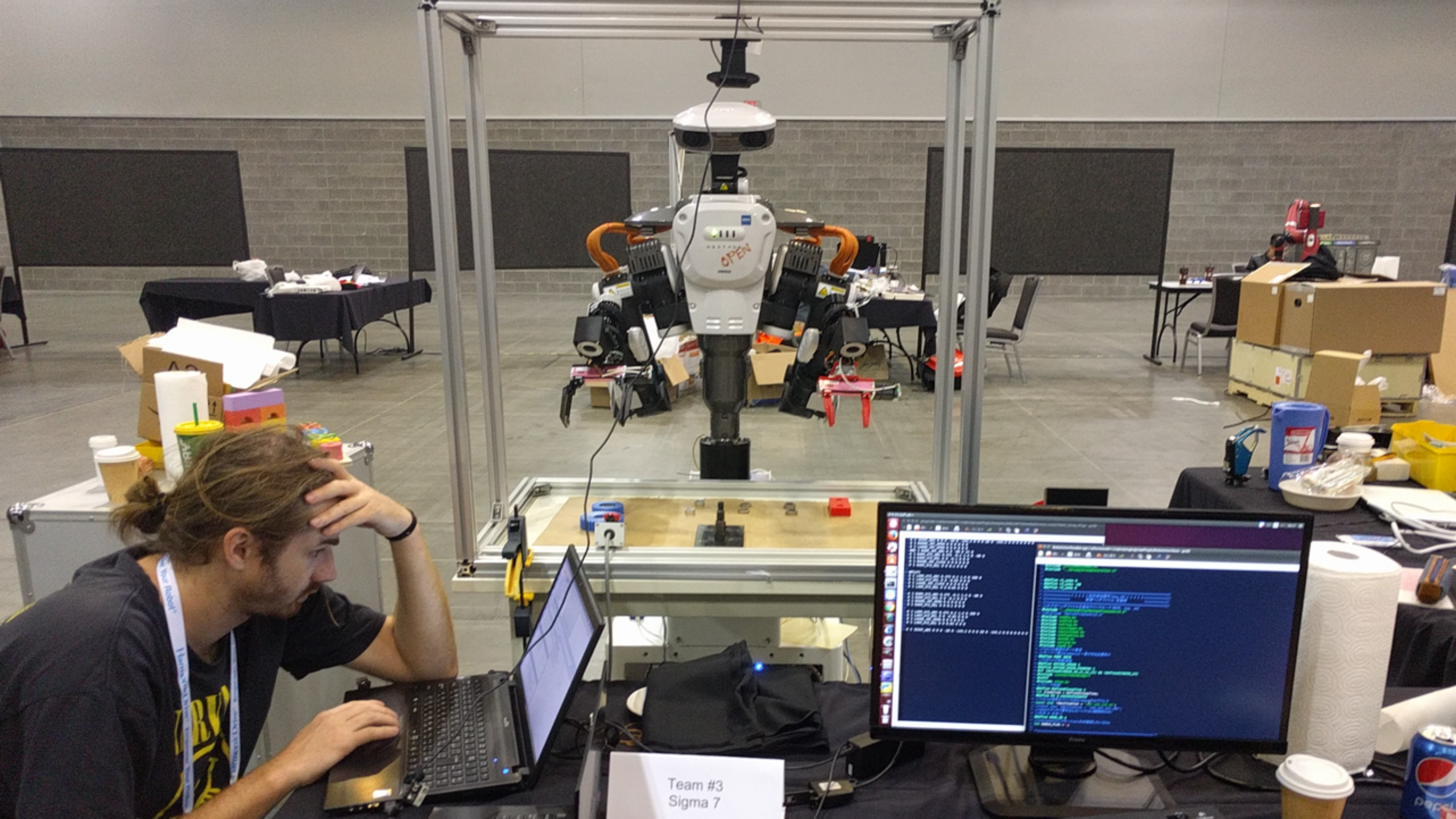
Objects Used in the Competition

Participating Teams

- University of Colorado & Robotic Materials Inc. (Track 1&2)
- Cothink Robotics (Track 1&2)
- Sigma 7 (Track 1&2)
- CambridgeARM (Track 1)
- Kanzawa & Shinshu (Track 1&2)
- Feifan AI (Track 1&2)
- Tsinghua University and Intel Corp. (Track 1&2)

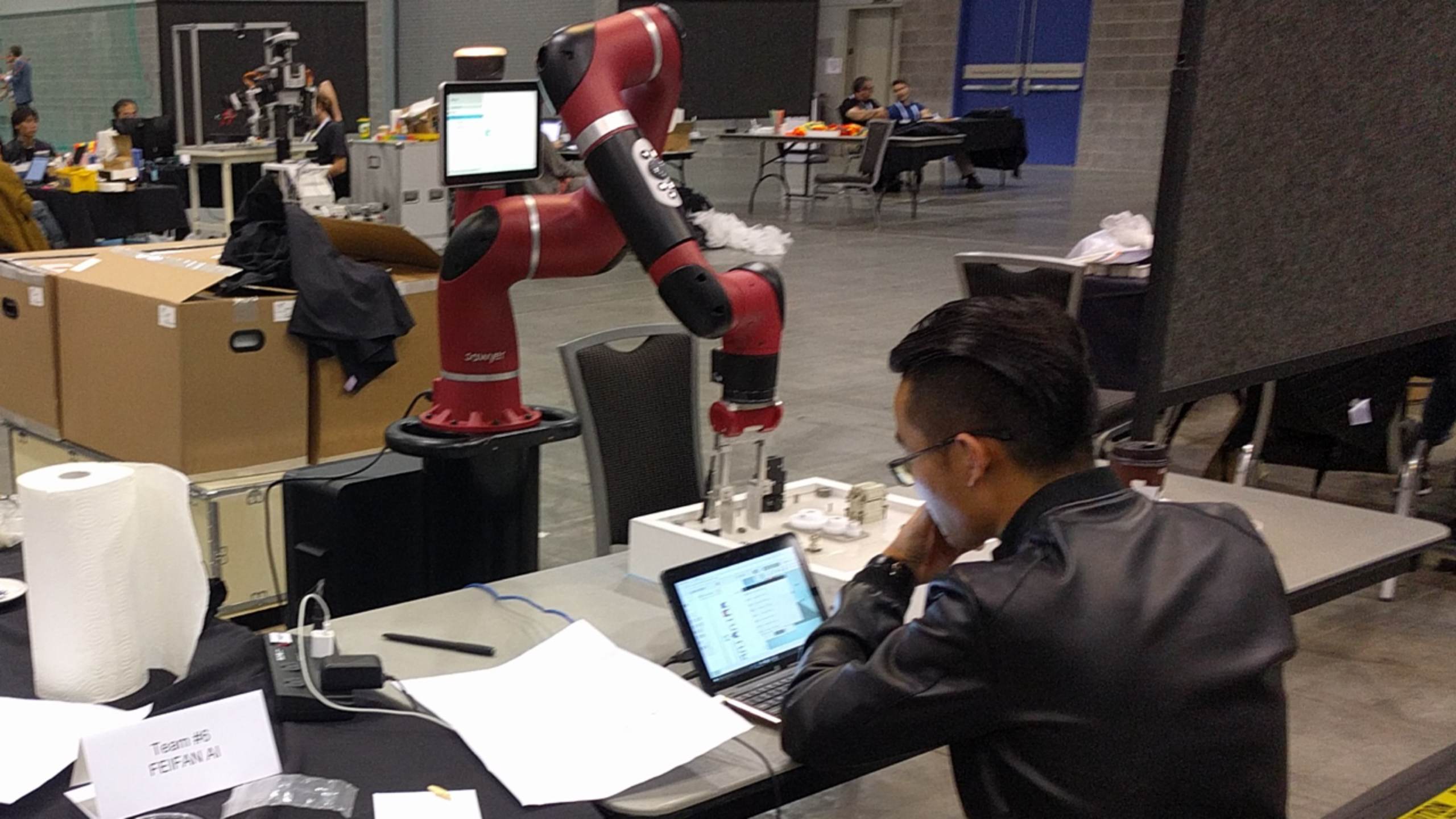

Team #1
University of
Colorado at Boulder


Team #2
Cothink Robotics


Team #3
Sigma 7

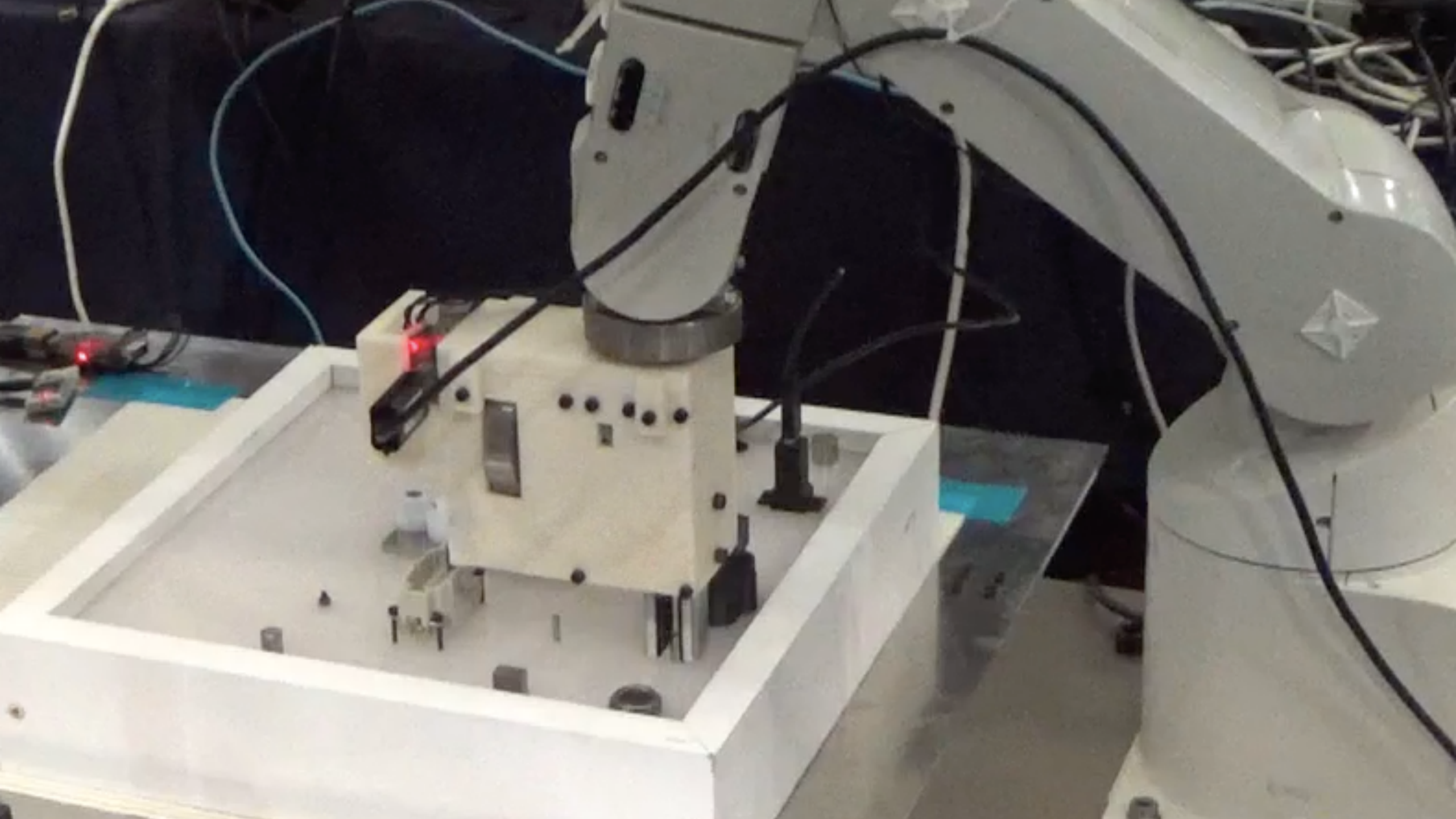

Team #4
CambridgeARM

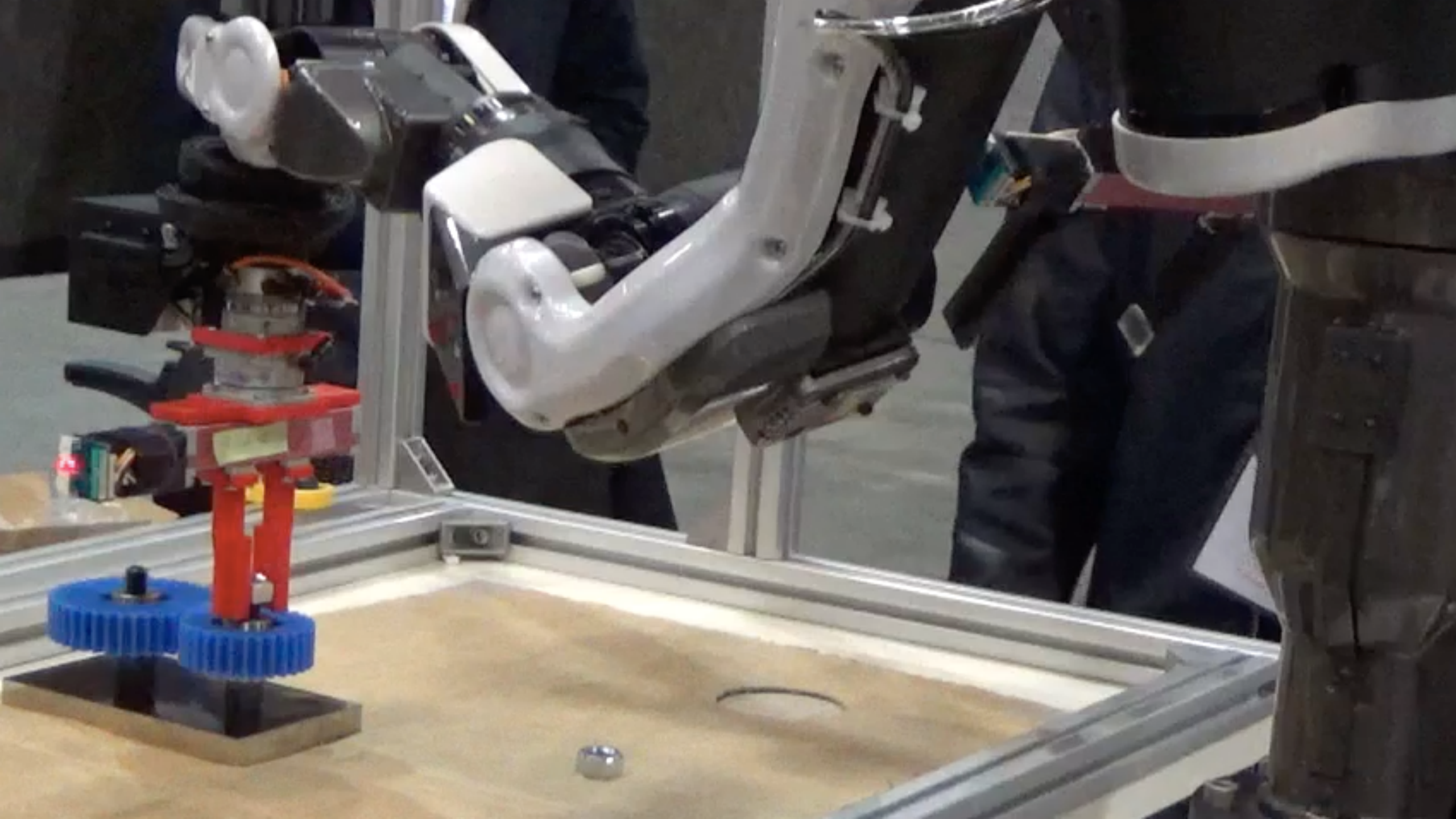

Pringles
MISUMI
Team #5
Kanzawa Shinshu

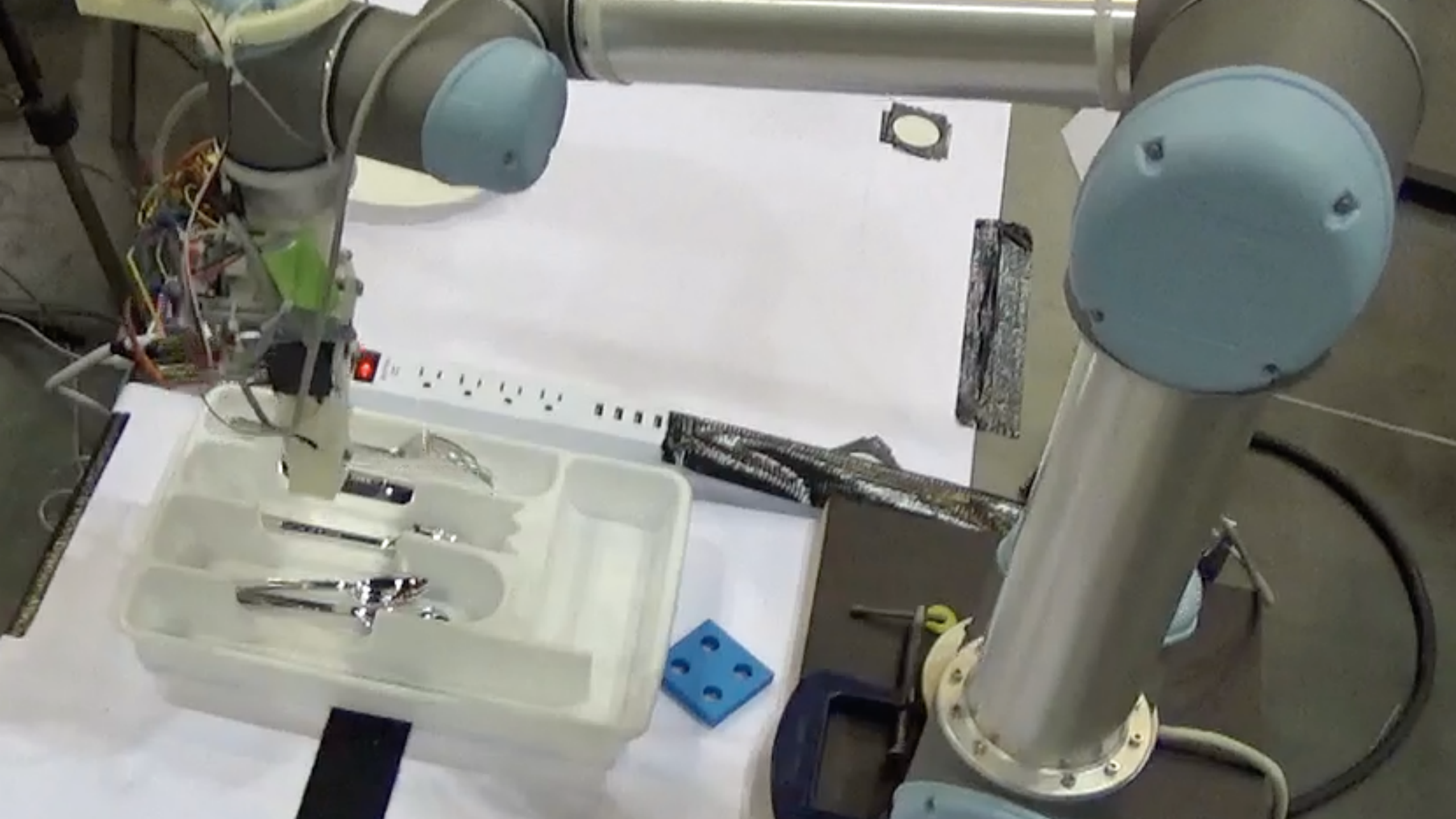

Team #6
FEIFAN AI

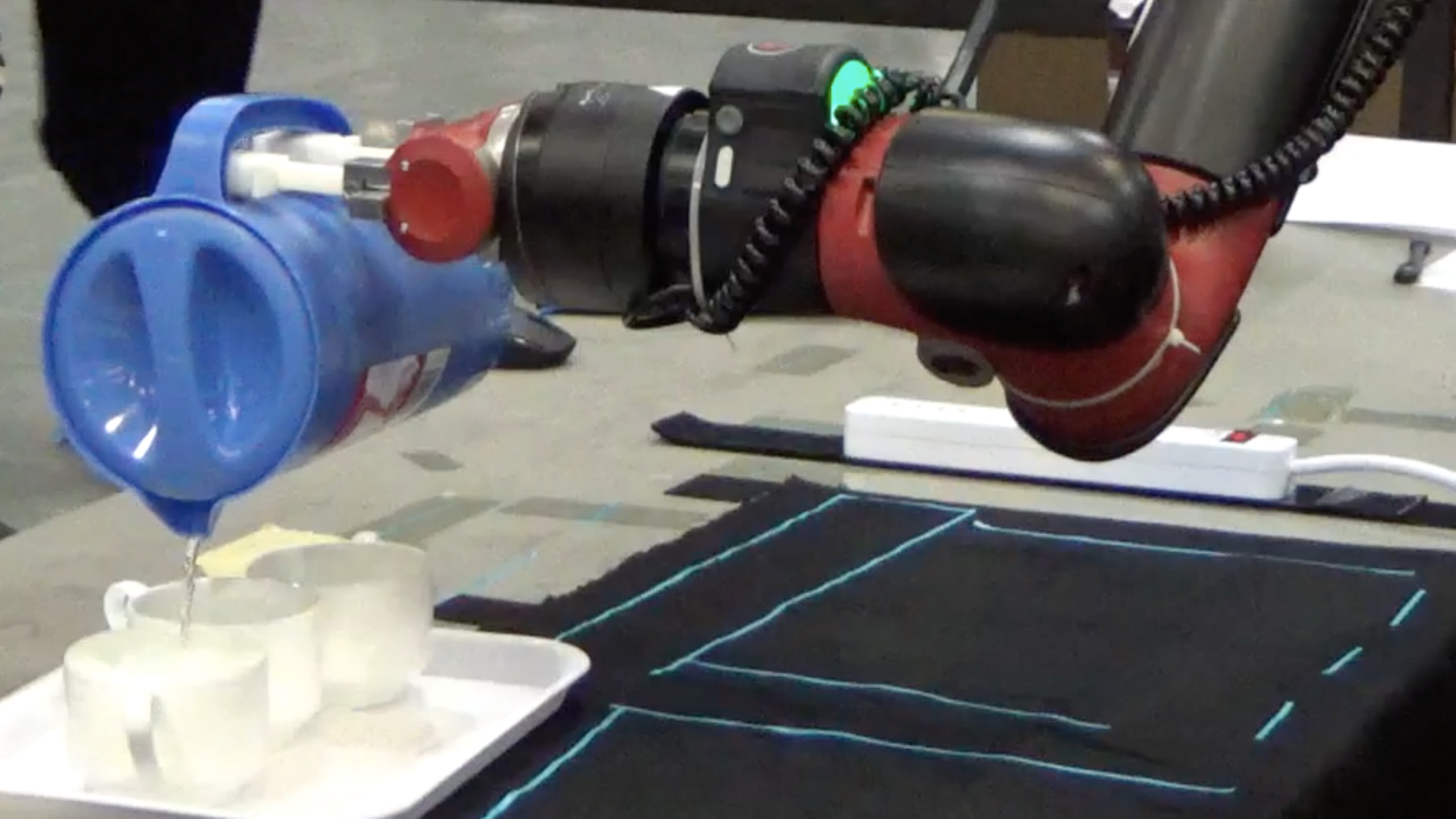

Team #7
Tsinghua University
and Intel Corporation

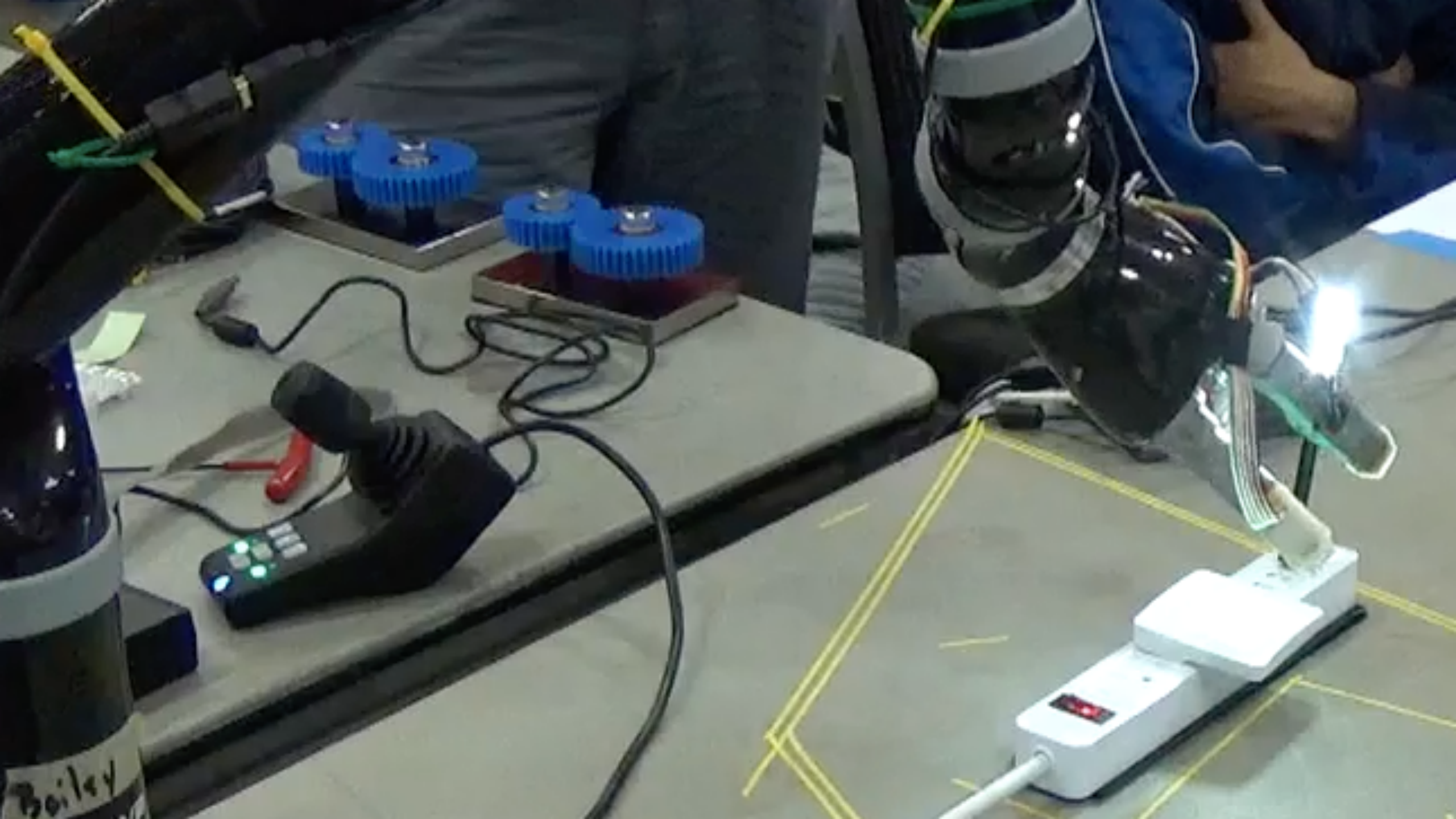
Tasks

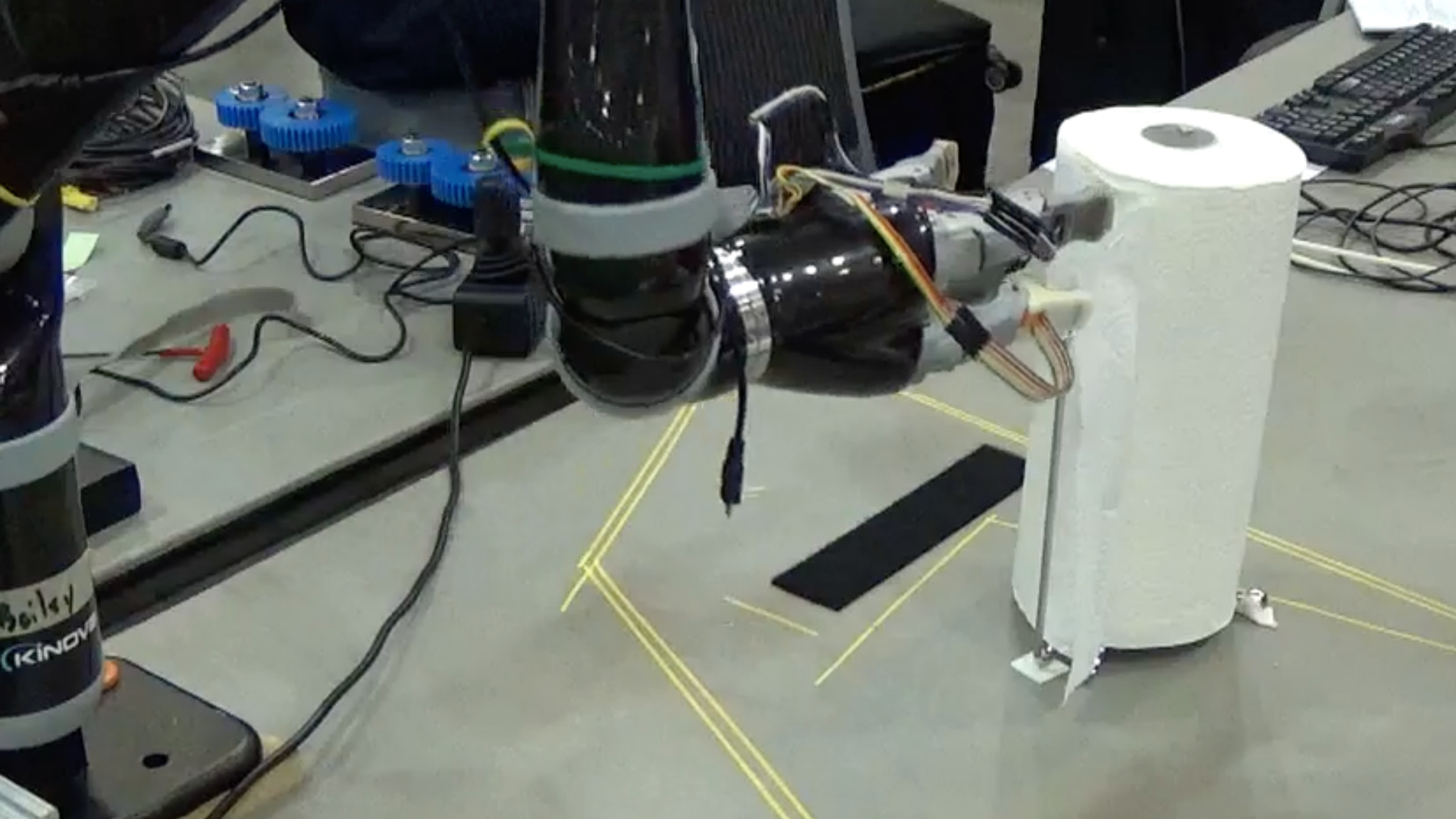


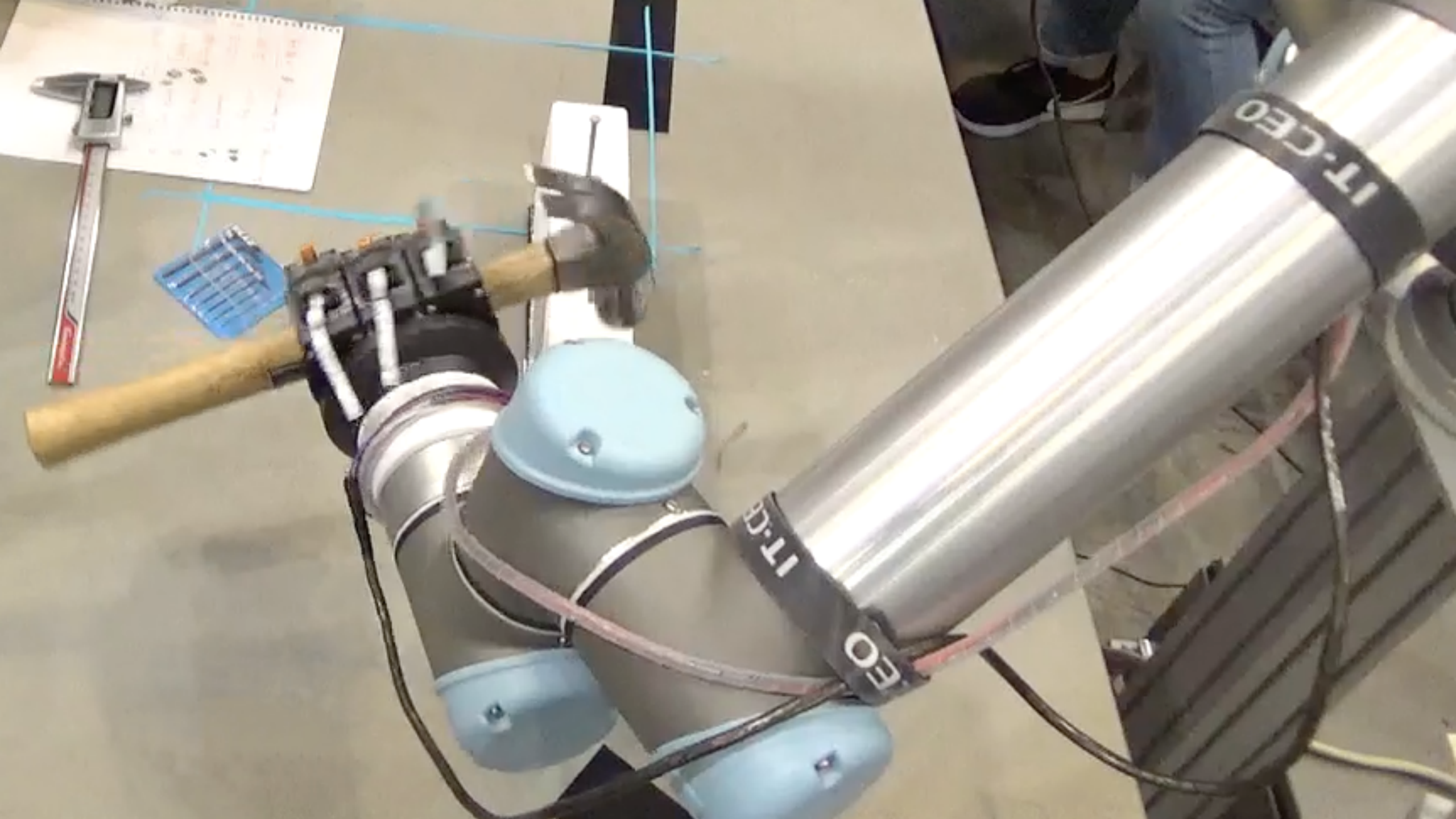


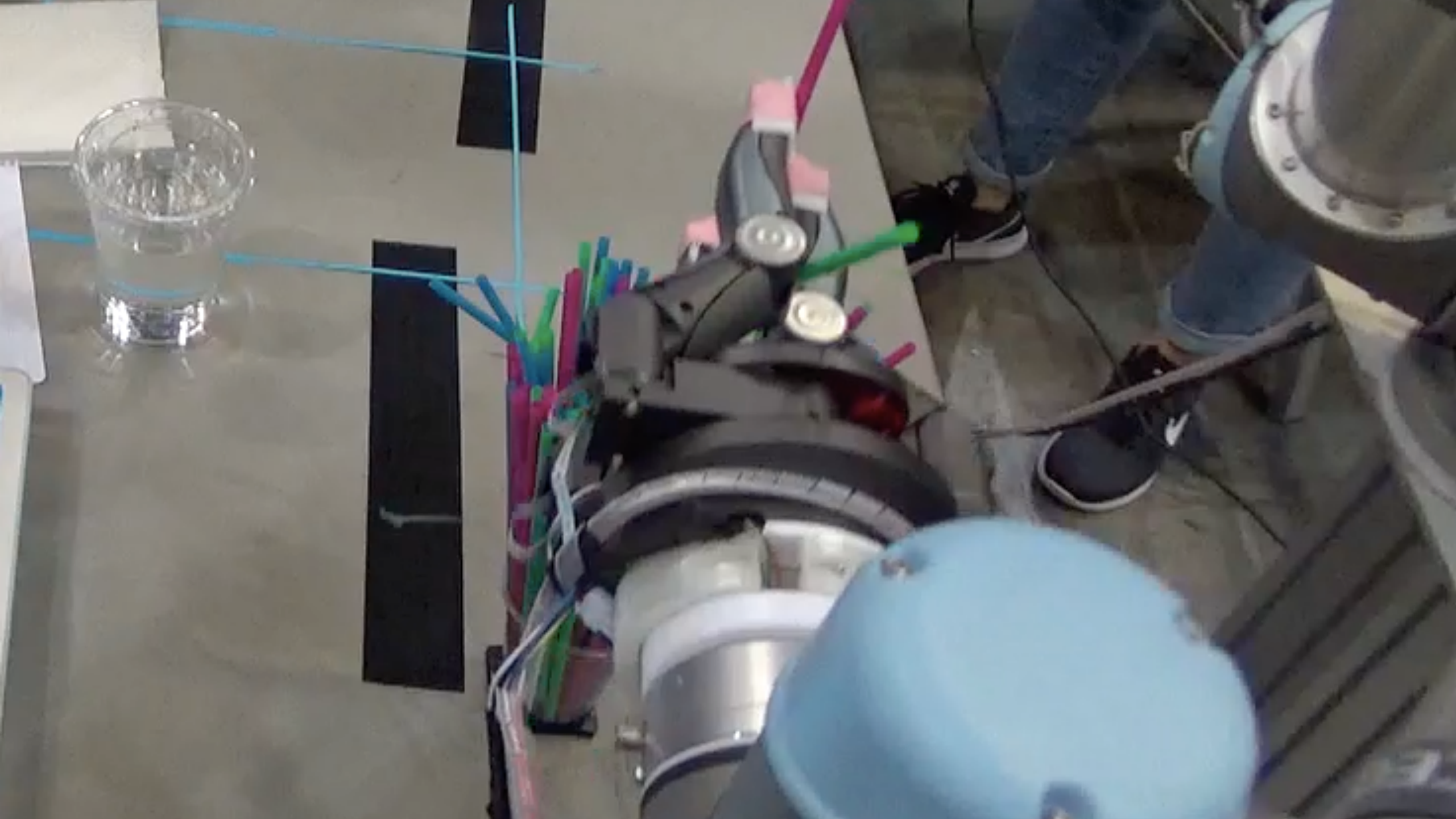


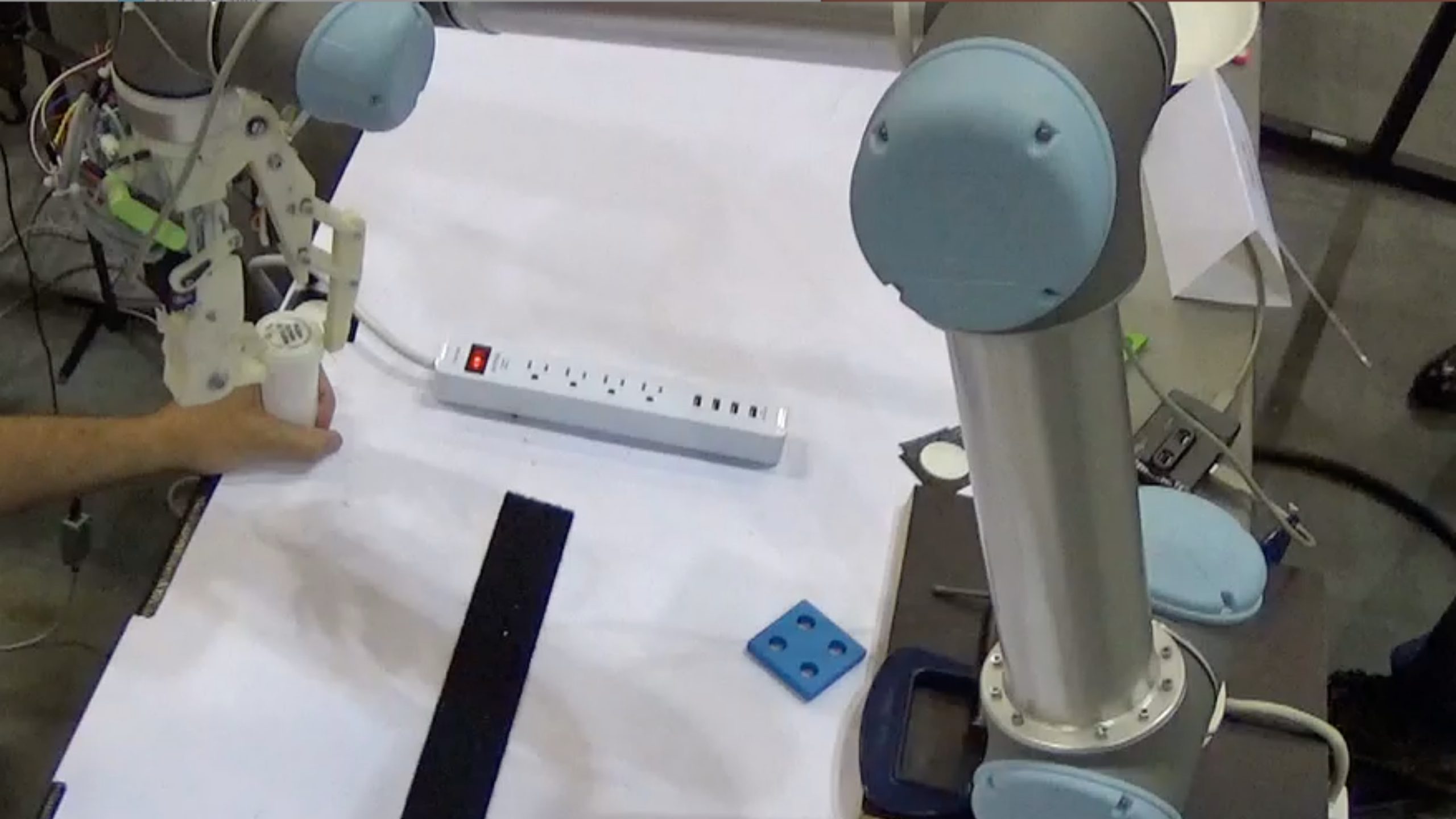












Awardees

- Service Robotics Track (Total 235 pts)
  - First place (Prize: $3,000 + ReFlex 1 Gripper): CambridgeARM, 148 pts
  - Second place (Prize: $1,500): Cothink Robotics, 135 pts
  - Third place (Prize: $500): Tsinghua University and Intel Corporation, 113 pts
- Manufacturing Track (Total 600 pts)
  - First place (Prize: $3,000): Feifan AI, 189 pts
  - Second place (Prize: $1,500): University of Colorado & Robotic Materials Inc., 179 pts
  - Third place(Prize: $500): Kanzawa Shinshu, 157 pts

Result Summary

- Tasks successfully performed by at least one team
  1. Transfer a cup on its saucer
  3. Stir water in a cup
  5. Plug into a socket
  7. Play sorting board
  8. Hammer a nail
  9. Transfer straw into a to-go cup with lid
  10. Open a bottle with a locking safety cap
- Tasks that no team could successfully complete
  2. Arrange silverware
  4. Pour water into a cup
  6. Tear away one piece of paper towel

Average Score by Task

1. Transfer a cup on its saucer - 20/60
2. Arrange silverware – 26/90
3. Stir water in a cup – 20/60
4. Pour water into a cup – 0/180
5. Plug into a socket – 40/120
6. Tear away one piece of paper towel – 10/120
7. Play sorting board – 65/180
8. Hammer a nail – 30/180
9. Transfer straw into a to-go cup with lid – 120/180
10. Open a bottle with a locking safety cap – 190/240