

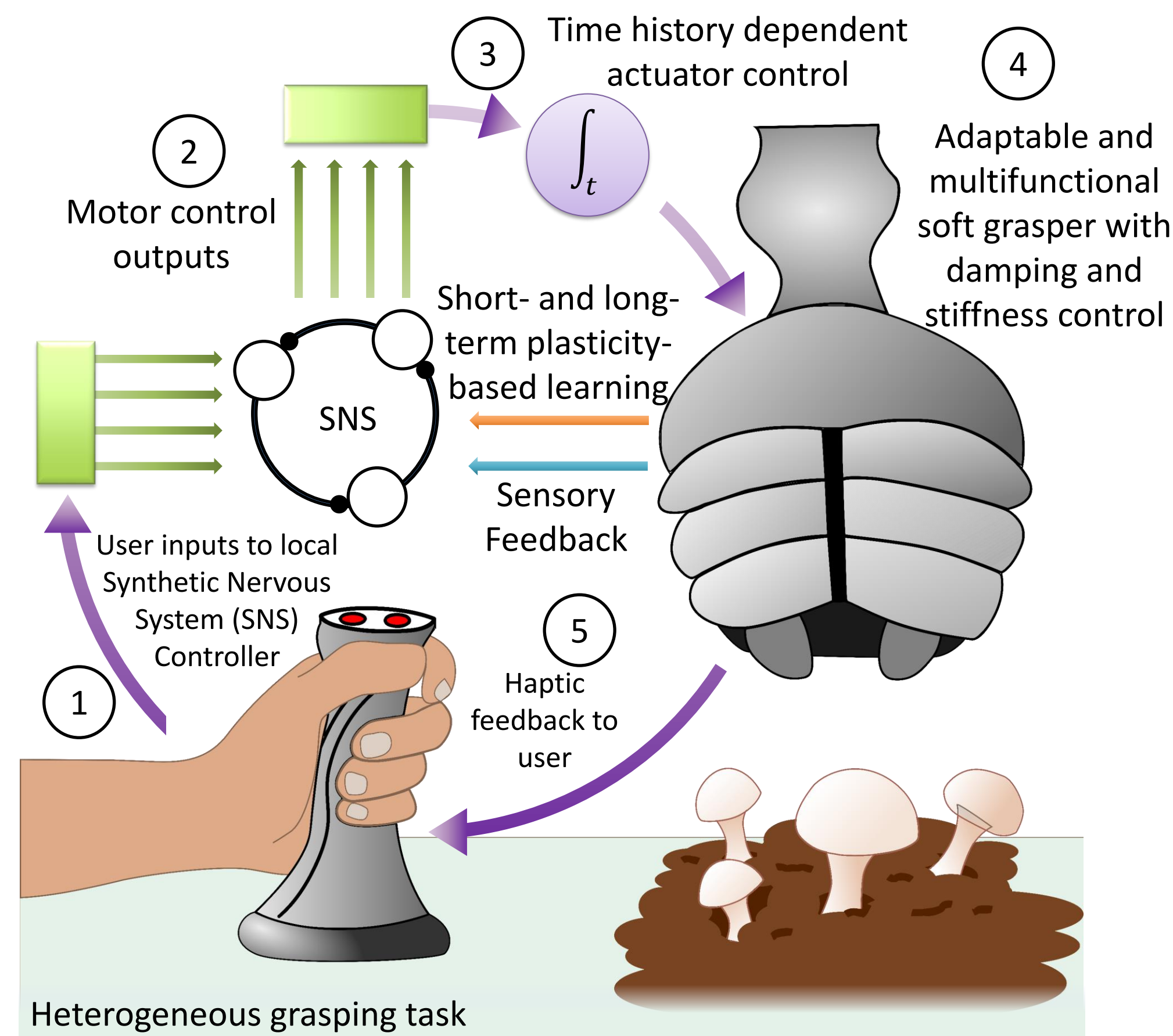
# Collaborative Research: FRR: Adaptive mechanics, learning and intelligent control improve soft robotic grasping

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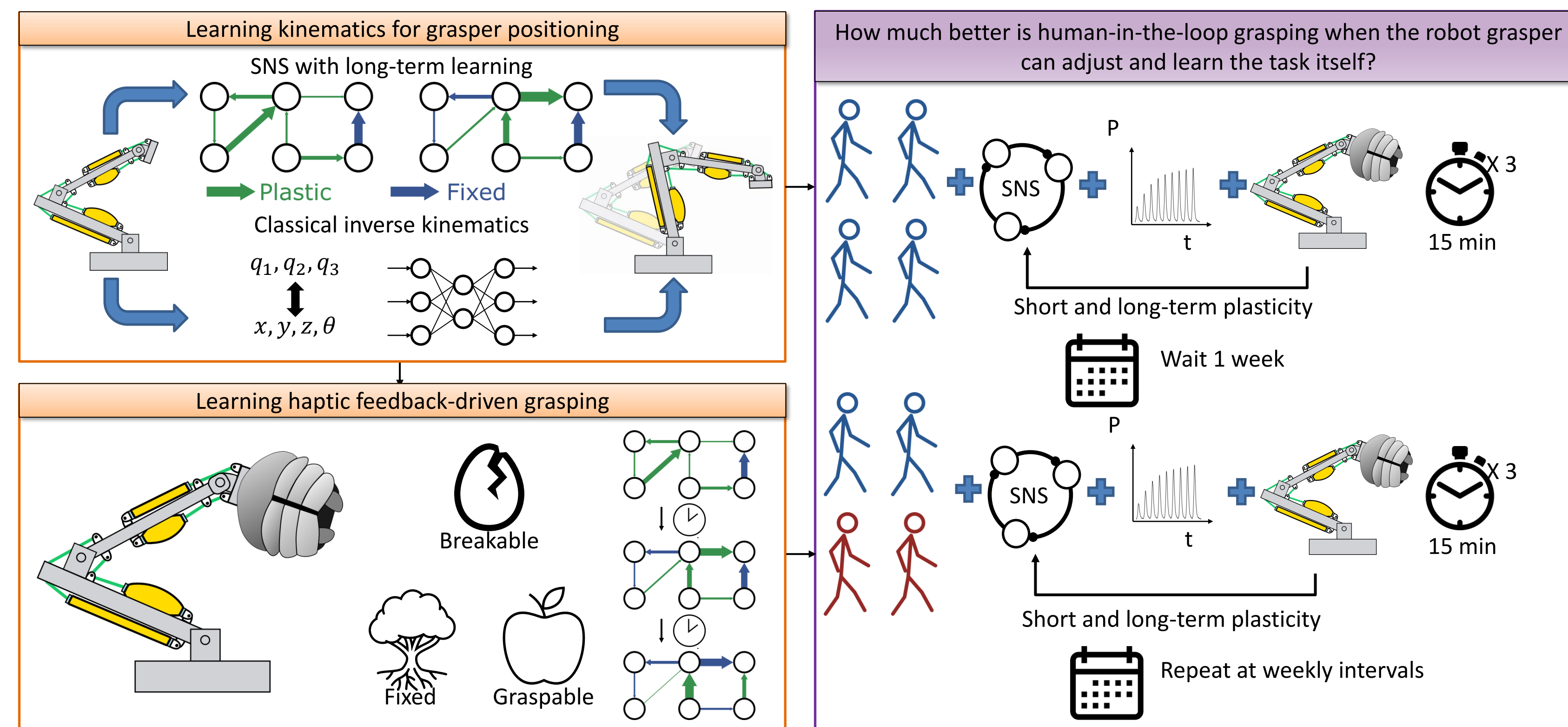
**Challenge:** Controlling soft robots, onboard learning, and manipulating complex objects remain ongoing robotics challenges

**Solution:**

1. Implement actuator adaptability over short timescales
2. Implement local control adaptability through short-term learning in a synthetic nervous system (SNS)
3. Implement longer-term synaptic weight changes in an SNS, mimicking learning from experience.



**Integration of learning, adaptable actuation, and SNS control in soft grasping to improve robot ease of use:**



## Broader Impacts:

- Agriculture
- Manufacturing
- Medicine

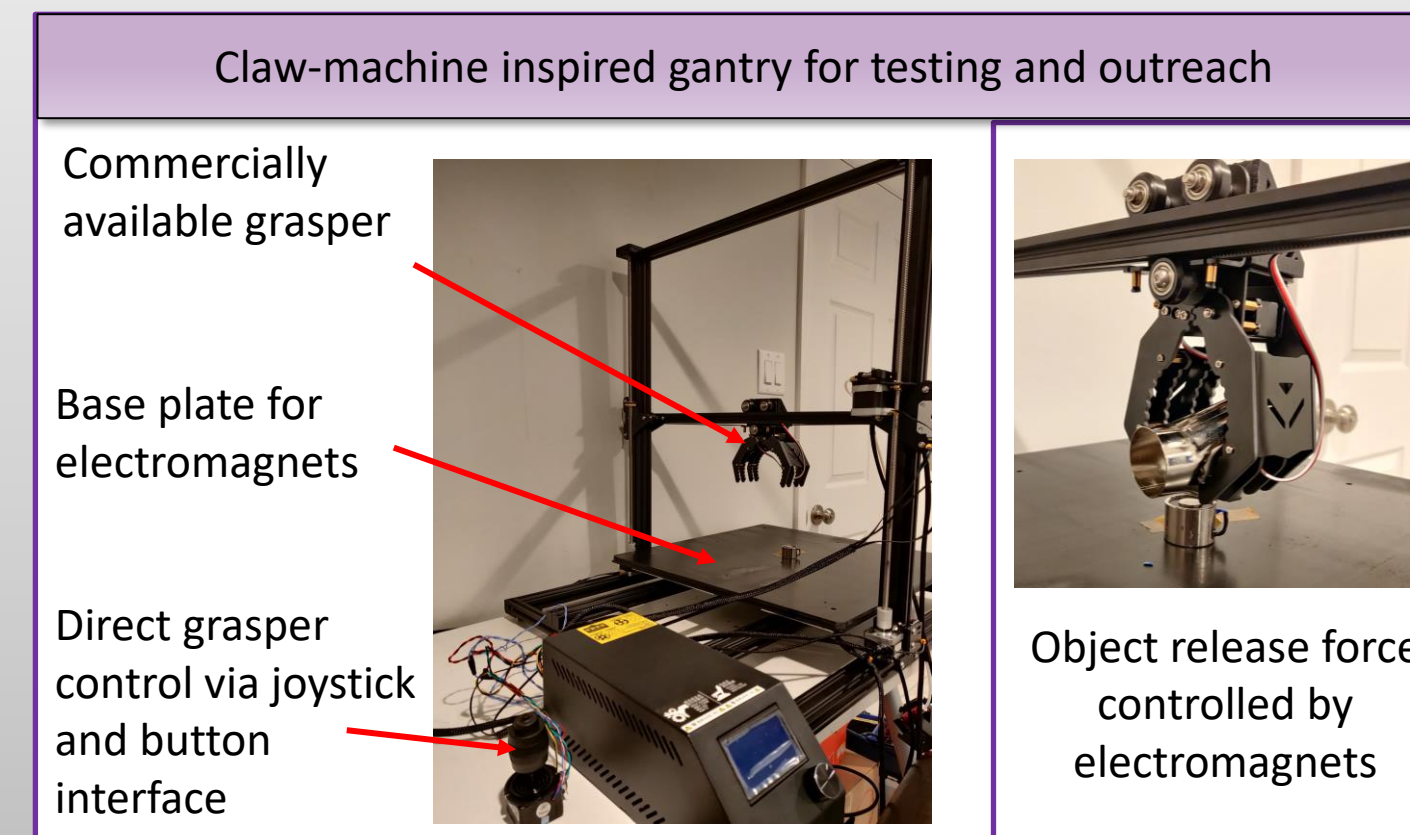


## Outreach:

- Including students in research as participants
- Summer and weekend classes

## Education:

- Integrate research findings in curriculum at CMU and CWRU



## Broader Impacts Assessment:

- Attitudes towards STEM
- Perceptions of robot
- Persistence
- Career outcomes