

# Assistive Child-Robot Interventions for Infants with Motor Disabilities

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## Central Research Goal

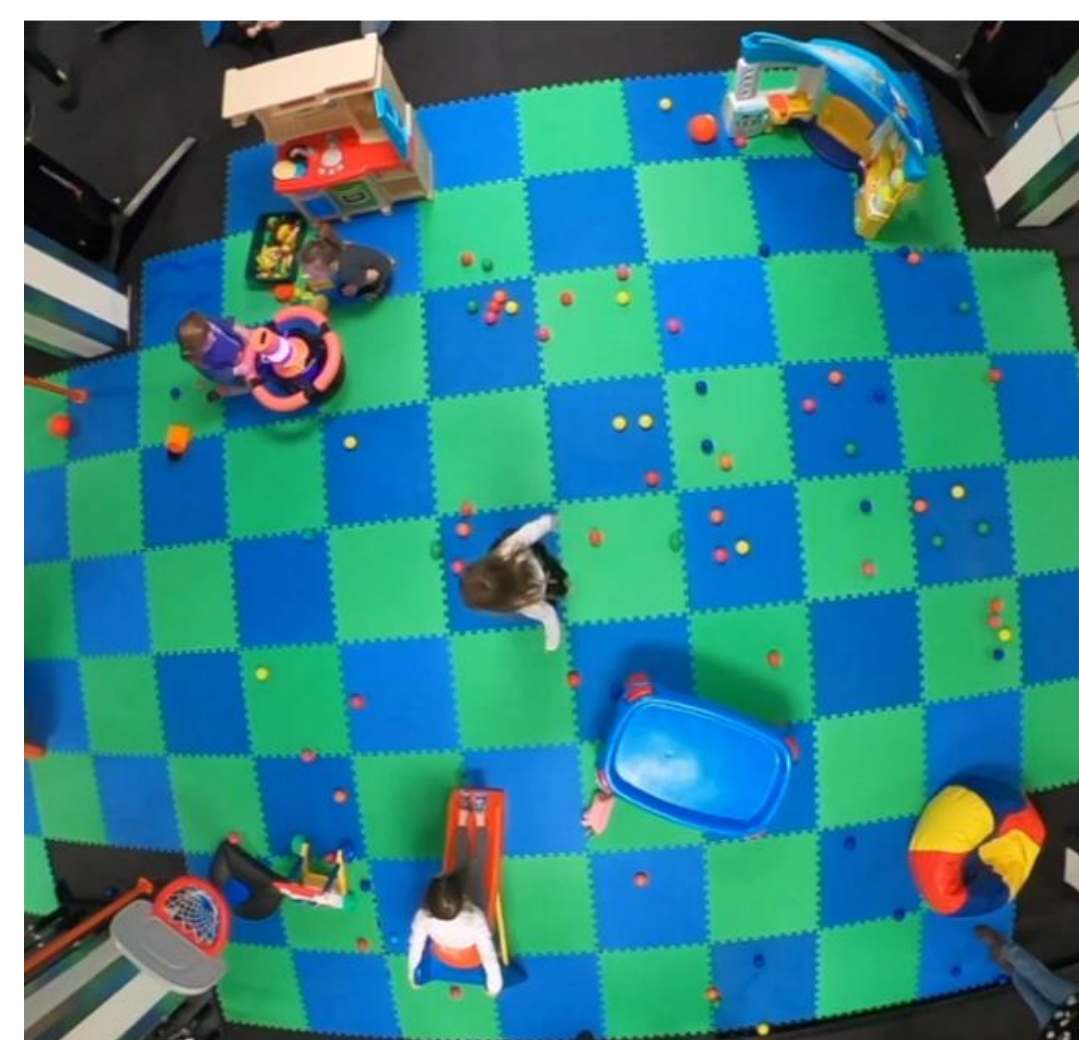
How do we enable a mobile assistive robot to encourage children with motor disabilities to practice motor (and other developmental) skills?

## Motivation

- Assistive robots may help encourage practice of motor skills
- Features of toys can offer insights for robot design

## Methods

- We reviewed 154 Fisher-Price toys for different features
- Features included lights, electrical and mechanical sounds, bubbles, self-movement
- We video coded a playgroup for robot behaviors
- Robot behaviors included lights, bubbles, sounds, motion



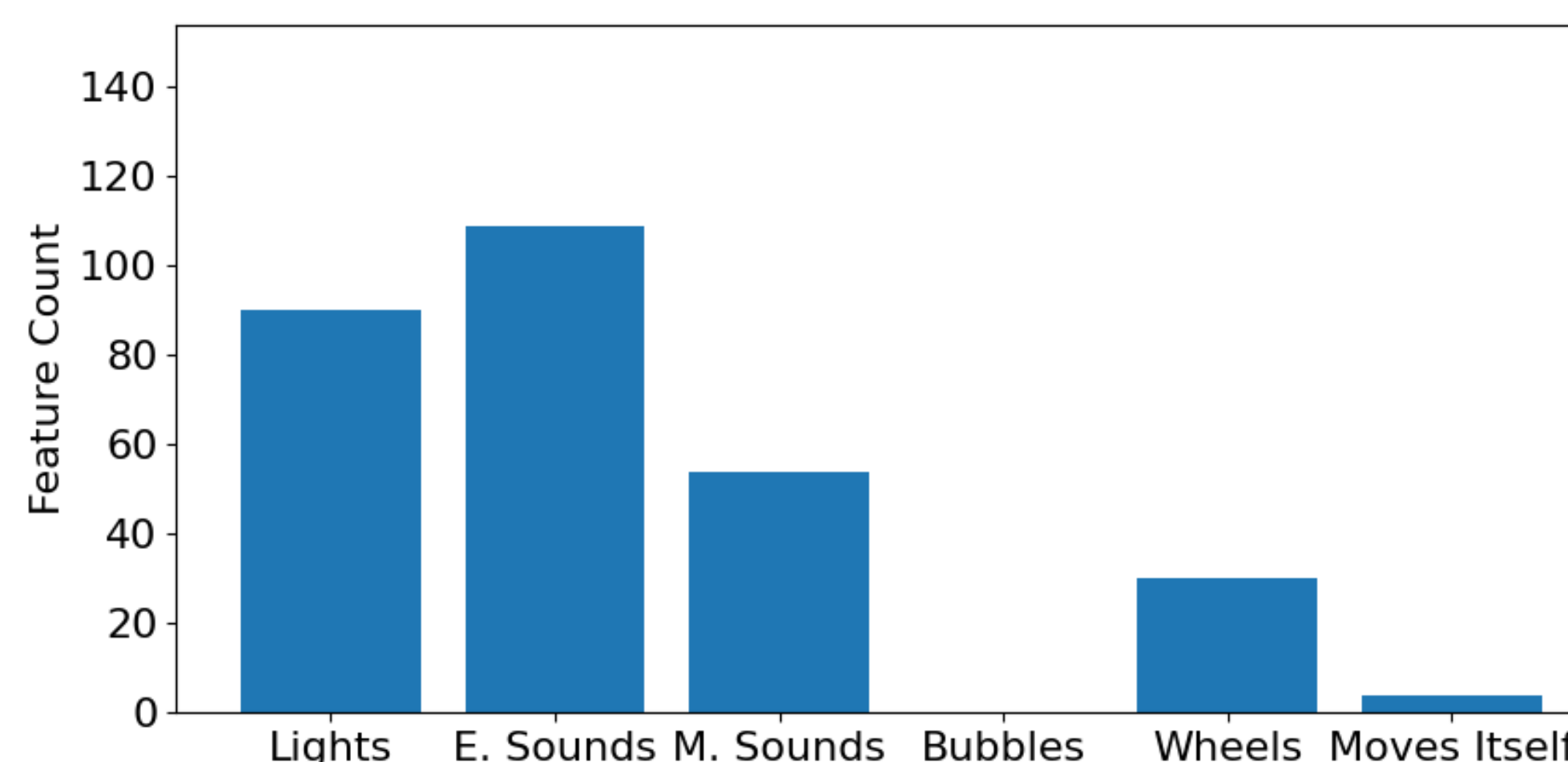
Overhead video example



Initial robot prototype

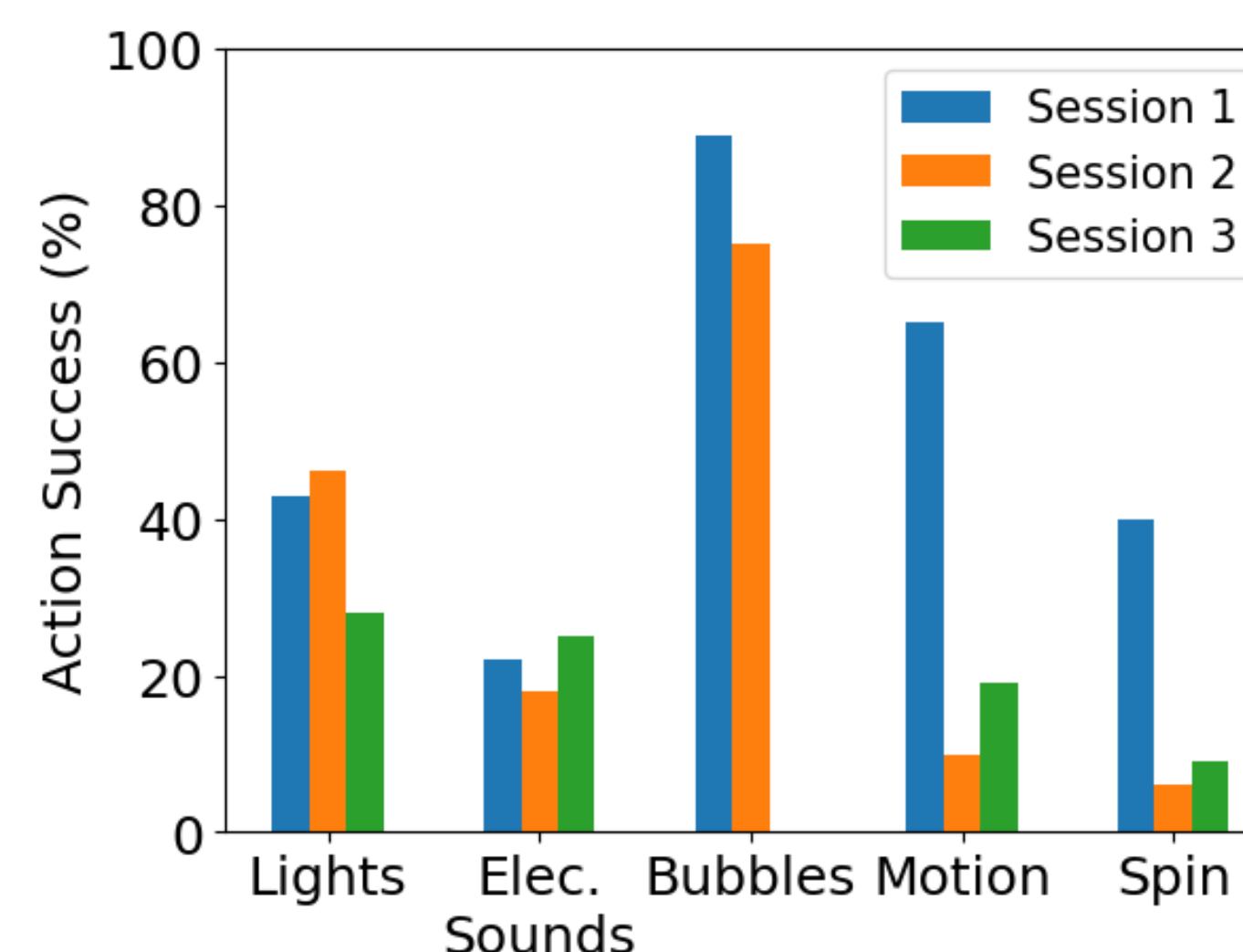
## Toy Review Results

- Lights and sounds were most common
- Bubbles and self-movement were rare



## Video Coding Results

- All behaviors were successful at least once per session (bubbles not functional during session 3)
- Bubbles were significantly more successful but not present in developmental toys



## Discussion

- Bubbles were not present in developmental toys but were most successful robot behavior
- Robot actuation and programmability may offer unique capabilities for practicing motor skills

## Future Work

- Create and test new robot behaviors such as ball launching
- Conduct further in-person studies
- Develop semi and full robot autonomy



New robot behaviors



Semi-autonomy testing

## Acknowledgements

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