Visual Robot Choreography for Clinicians

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Outline

Introduction
Design
User Interface
Conclusion
Robot-Assisted Therapy
Project Context

- Choreography (sequencing, mapping user input)
- Creating robot animation
- Video coding
Clinicians Must Program Robots

- Scalability
- Differing needs
- Progression
Outline

Introduction

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Participatory Design

• Group includes CS, ME, and ComDis

• Requirements-based
  – Basic capabilities
  – Control discreetly (WOZ)
  – Low workload to control
  – Low dose
Therapy Models

• One child at a time
• Hand-over-hand
• Robot is a pivot
• Turn-taking
• Songs
• Low dose
Therapy Models
How to program the robot?

• Low-level (C++, etc.)
• Programming by demonstration
• Visual Programming
• Visual programming is good for sequencing and mapping user input to actions

Mindstorms.lego.com

Aldebaran-robotics.com
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Current User Interface
Clinician Feedback

• Small pilot study
  – Clinicians feel empowered and like the interface
  – Some usability issues

• Field experience
  – 14–16 weeks per child of robot-assisted therapies for six different children with ASD
  – Robot behaviors created by engineers under the direction of clinicians
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Conclusions

• Visual programming is sufficiently good for this application
• Clinicians in our group can choreograph robots with our software
• Clinicians like using the software
• Pilot study highlighted next steps for improving the system
Future Work

• Next generation interface
  – Improve usability
  – Evolve design
• Support animation creation
Acknowledgments

• The clinicians
• Tim Major
• HONDA
• Masdar Institute