The Challenge

- Users with varying dexterity/motor control need to be able to operate devices in their daily lives.
- Play is important for childhood development [1][2].
- Adapted game controllers are needed for rehabilitation therapy.
- Seattle Children’s:
  - Ensuring design can be replicated.

Inspiration

- Open Source Options: available, but incomplete [3].
- Commercial Options: May not meet all needs. Prohibitively expensive ($1,344.00) [4].

Our Controller Design

1: Designed bigger layout of our controller with Rhino software and laser cut it onto wooden plate.
2: Chose big arcade buttons and joystick that are easy to push and grab onto.
3: Understood XBOX joysticks and magnetic triggers in order to connect the right terminals of the new joysticks/buttons to the right sense and ground pins.
4: Soldered wires to XBOX controller circuit board and connect them to appropriate buttons and joystick to control the XBOX controller.

5: 3D printed frame and foam-cut packaging to protect electronics during transit.

References


The Future

What are your future plans?
- Completion of this device
- Adapting joysticks for other users (e.g. softer ball) and amputees (attachment to allow movement of joystick with elbow)
- Further adaptation: Pedals as triggers? Head tilt sensors?

What are continuing challenges and opportunities?
- Size (designed to specifications of wheelchair tray, may not be optimal for all users)
- Scale of production

What does the future in this space look like?
- Seattle Children’s Hospital, other collaborators
- Universal Design

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