Adapted XBOX Controller

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HUSKYADAPT
Accessible Design & Play Technology

The Challenge

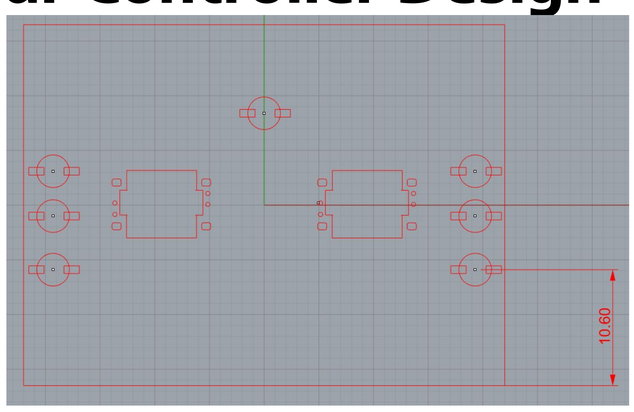
- Users with varying dexterity/motor control need to be able to operate devices in their daily lives
- Play is important for childhood development [1][2]
- Adapted game controllers are needed for rehabilitation therapy
- Seattle Children's:
- Ensuring design can be replicated

Inspiration

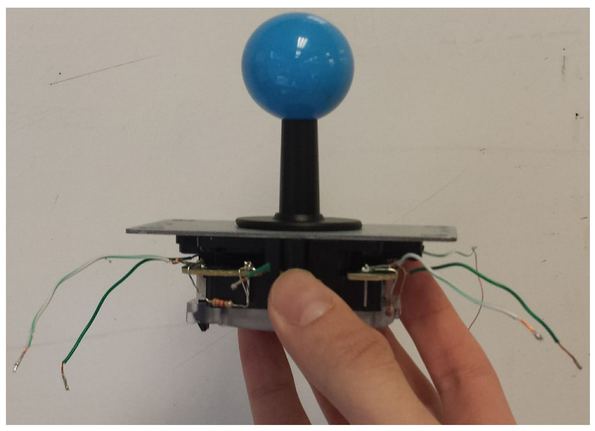
- Open Source Options : available, but incomplete [3]

- Commercial Options: May not meet all needs. Prohibitively expensive ($1,344.00) [4]

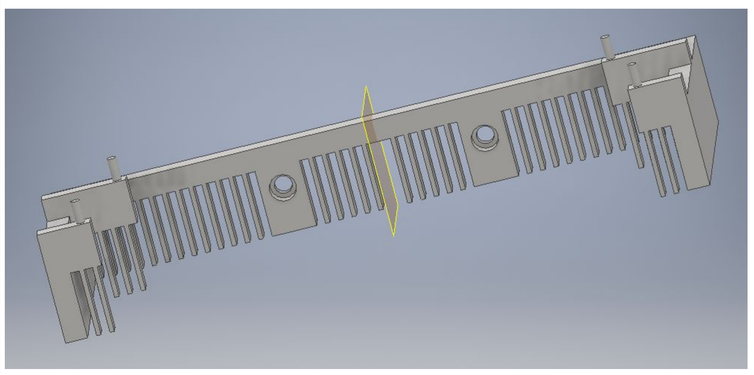
Our Controller Design



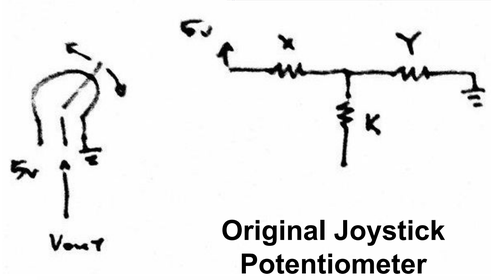
1: Designed bigger layout of our controller with Rhino software and laser cut it onto wooden plate.



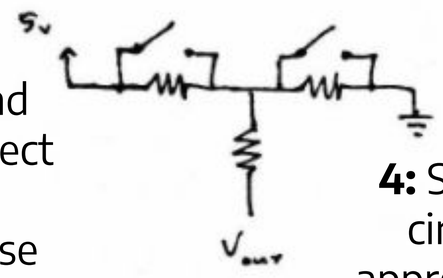
2: Chose big arcade buttons and joystick that are easy to push and grab onto.



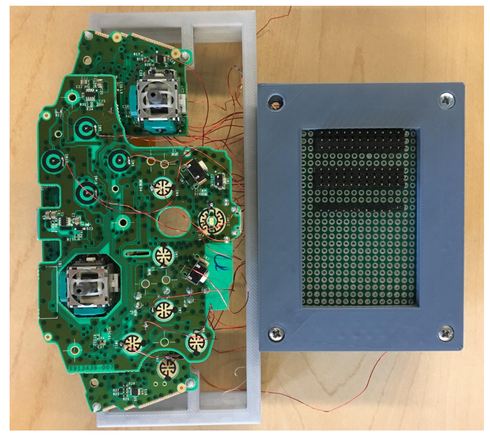
3: Understood XBOX joysticks and magnetic triggers in order to connect the right terminals of the new joysticks/buttons to the right sense and ground pins.



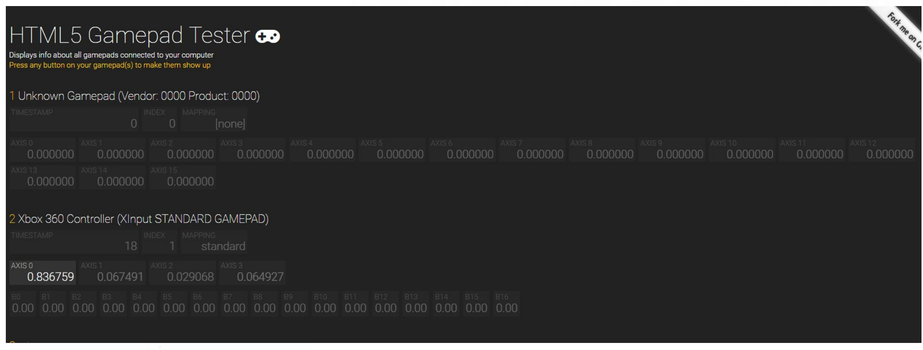
Original Joystick Potentiometer



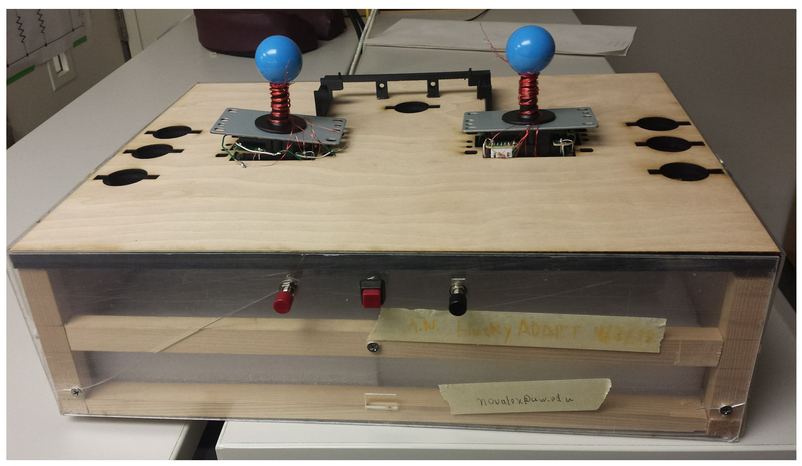
New Design



4: Soldered wires to XBOX controller circuit board and connect them to appropriate buttons and joystick to use new sets of buttons and joystick to control the XBOX controller.



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



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

References

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2. Ginsburg, K. R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds.*Pediatrics*,*119*(1), 182-191.
3. *Xbox 360 Arcade Controller - Project Gyokusho*. (2006). *Instructables.com*. Retrieved 15 April 2018, from http://www.instructables.com/id/Xbox-360-Arcade-controller---Project-Gyokusho/#step1
4. *Ultimate Arcade 2 Limited Dexterity Video Game Controller*. (2016). *Abledata.acl.gov*. Retrieved 15 April 2018, from https://abledata.acl.gov/product/ultimate-arcade-2-limited-dexterity-video-game-controller

Acknowledgements

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