BabyJoy

Inspired Motion

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Background

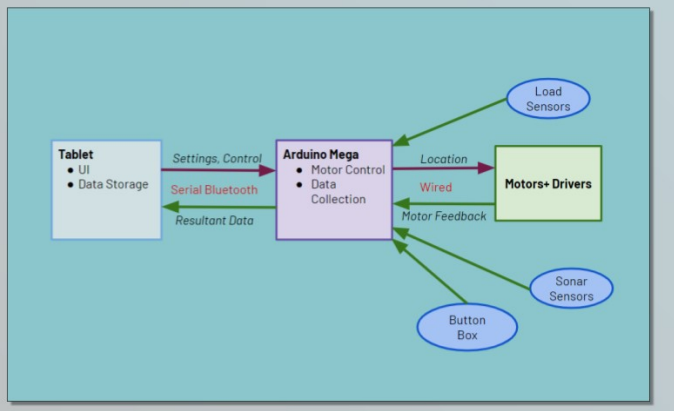
Cerebral Palsy (CP) is a common motor disability affecting 1 in every 312 kids in the U.S. In order to mitigate the effects and encourage muscle growth, it is essential for patients to receive physical therapy in their early development period. A large number of affected infants do not receive a sufficient volume of therapy due to cost and resource restrictions.

The objective of BabyJoy is to emulate techniques used at in-person therapy sessions on a device that can be used in the home by caretakers.

Overview

- Mimics ball therapy - a form of therapy that encourages core and trunk strength
- Meant to research effects of high volume therapy on mitigating effects of CP
- Low to the ground and fits through a doorway allow in-home use

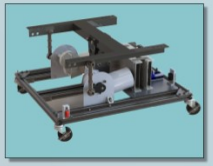
Hardware Block Diagram



BabyJoy Prototype

Shown above is a 16-inch doll (below average newborn infant)

Components

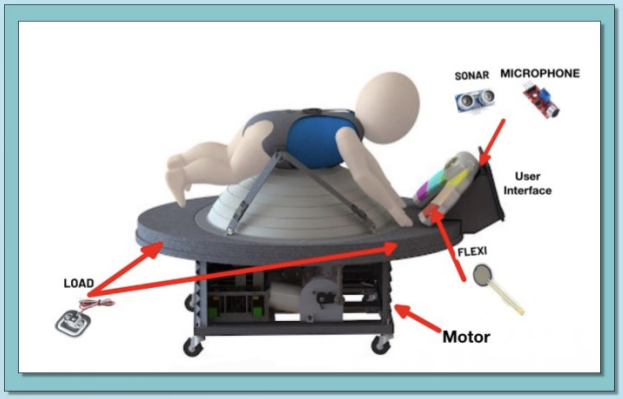


Physical Structure
- Retrofitted Racing Simulator
- Motors placed underneath move platform using linkage system
- Smooth, therapeutic motion

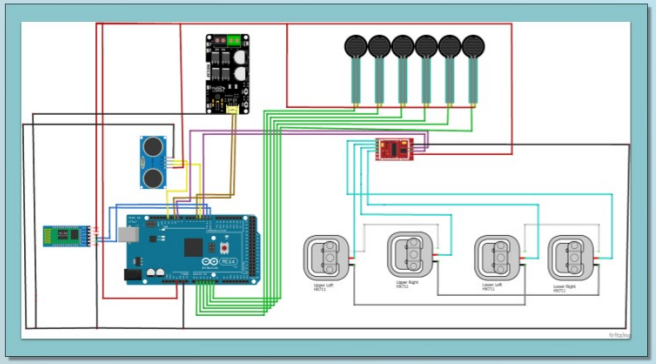
Sensor Integration
- Load & sonar sensors to track weight and placement of infant
- Flexi sensors in button box to track infant's interaction via # of taps
- Microphone sensor to detect frequency of infant crying

User Interface
- An app that runs on the attached tablet to control the BabyJoy through preset therapy routines, as well as collect and record session statistics

Component Placement



- Data Collection to help therapists and researchers track patient progress
- User-friendly Interface
- Ready to test research capabilities and dependable data collection.



- Sensors and communication modules are wired to Arduino Mega.
- Data collected is then relayed via bluetooth for storage on the tablet.

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