Robots for Disability
Tot Bot
Visual interface for infants on Pioneer robot

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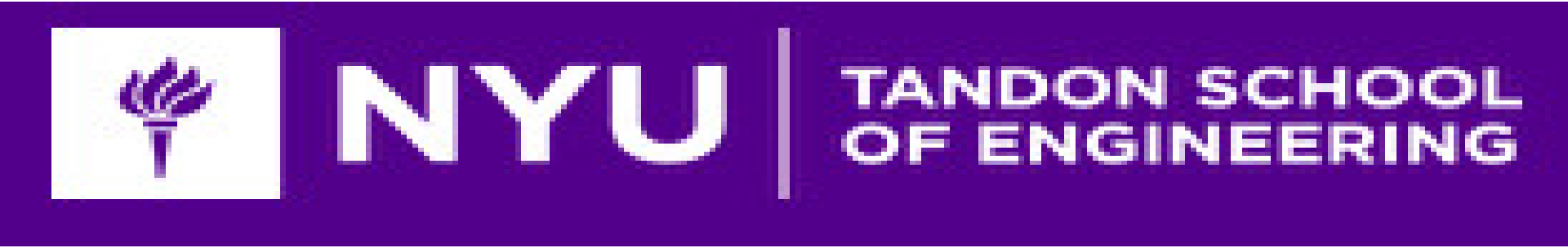
Mechatronics and Robotics



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Effect of environmental stimulation on infant’s development

According to studies, environmental stimulation plays a big role in the advancement of infants ranging in the early two years of life. Infants who are not exposed to enough environmental stimulation, have shown to have lower IQs in later ages. Infants who are brought up in orphanages as compared to foster homes have shown IQ differences of up to 20 points. Socio economic factors have also proved to make a big difference as it ultimately impacts the environment of the infant.

In such circumstances, an infant suffering with a disability or a handicapping condition is not able to explore its environment at all hence receives no stimulation to develop to it full potential. It can delay or affect how a child plays, the kinds of activities the child engages in, and the child's ability to use objects as an avenue to learning and generalizing new skills or concepts. The child may have difficulty moving to the materials or areas available for play. He/She may have difficulty manipulating materials in a constructive or meaningful way.

Proposed solutions

The intellectual development of the infants suffering with physical limitations can be enhanced by giving them an equal chance and an ability to move around and explore the environment rather than depending to be carried around. There are several existing research projects which can help an infant to move on their own. Infants are typically able to crawl between the ages of 5-10 months and are able to start walking between the ages of 9-12 months. So, if infants with disabilities are able to explore as per their will, they may have a chance to a regular development.

Credit: Courtesy of Carole Dennis

Weebot from Ithaca College, New York. A 5 month old baby who has not started to crawl yet is trying to reach for the paper when given the means. They tested the robot

Some other examples are:

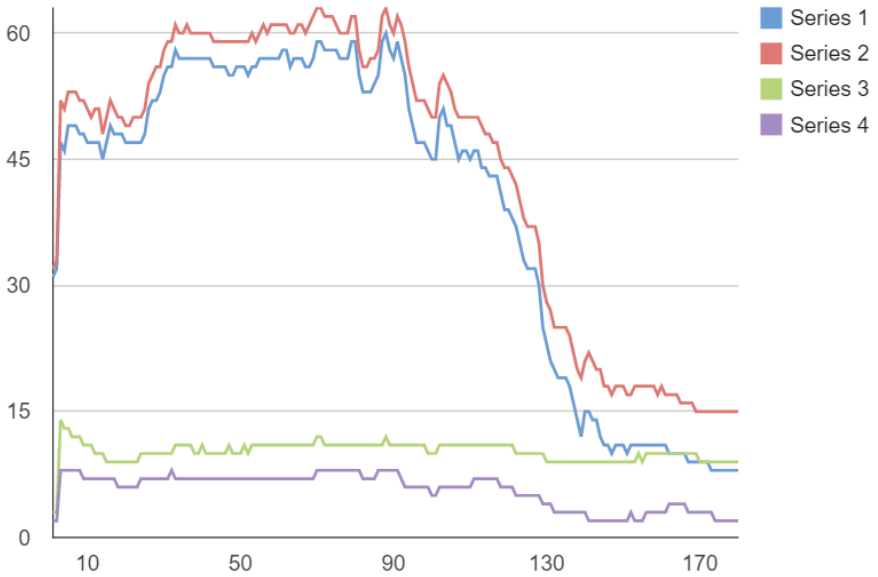
ROBO CRAWLER

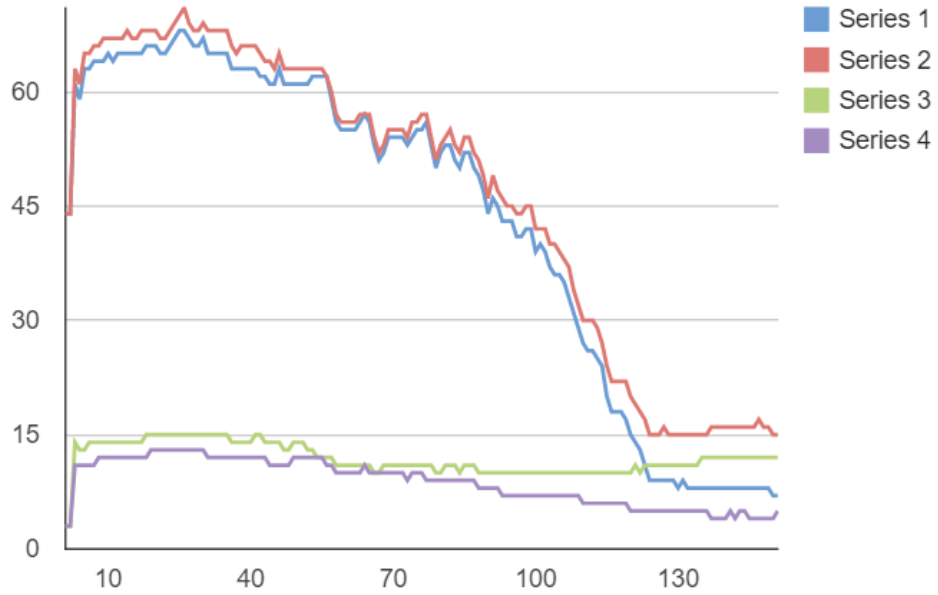
BOOSTER SEAT DRIVER

Tot Bot

“Tot Bot”, which enables a kid to see its surrounding on the tablet screen and then reach a selected point by a touch on the screen. The Tot Bot follows the simple principle that a kid would reach forward to grab an object that it wants, and in this case is able to see in the IPad screen, hence touches it.Steering should be relatively simple for a child in this as he/she simply has to want something and reach for it on the screen.

GRAY SCALE DATA

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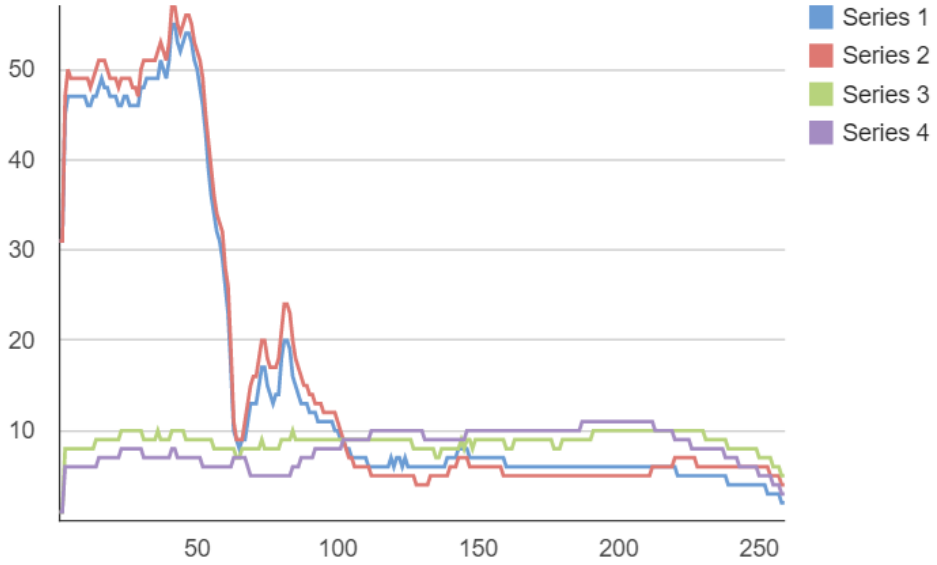
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Thank You..
Questions ??