Smart Toy Gym for early detection of developmental disorders

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Technology description

Detecting disorders for infants in a natural play environment

Problem

Currently, it is difficult to diagnose developmental disorders in very young children (< 11 months). Certain neurological and motor impairments would benefit from early intervention and rehabilitation if they could be detected in the first year. Disorders such as Cerebral Palsy have no biomarkers and must be diagnosed by observation. The earlier intervention can begin, the greater the likelihood of improved outcomes. Existing systems for detecting these problems involve the child sitting in a special chair, or wearing markers for video motion capture, and are generally cumbersome.

Solution

Researchers at the University of Pennsylvania have created a Smart Toy Gym that could provide data capture for diagnosis in a child-friendly natural play environment. This system appears similar to existing toys, but it is equipped with sensors to capture data about the child's movements and reactions. The data from the child's movements can be compared to past datasets to provide an early warning for developmental disorders. This system is not specific to any one disorder and can be sent home with the patient, allowing easier and more comfortable detection of disorders in young children.

Application area

• Natural, familiar play environment

• No special equipment required for the child to wear

• Can be used as an at-home or doctor's office solution

• Early detection of difficult to diagnose problems

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