

# Control of Laminate Bipedal Locomotion

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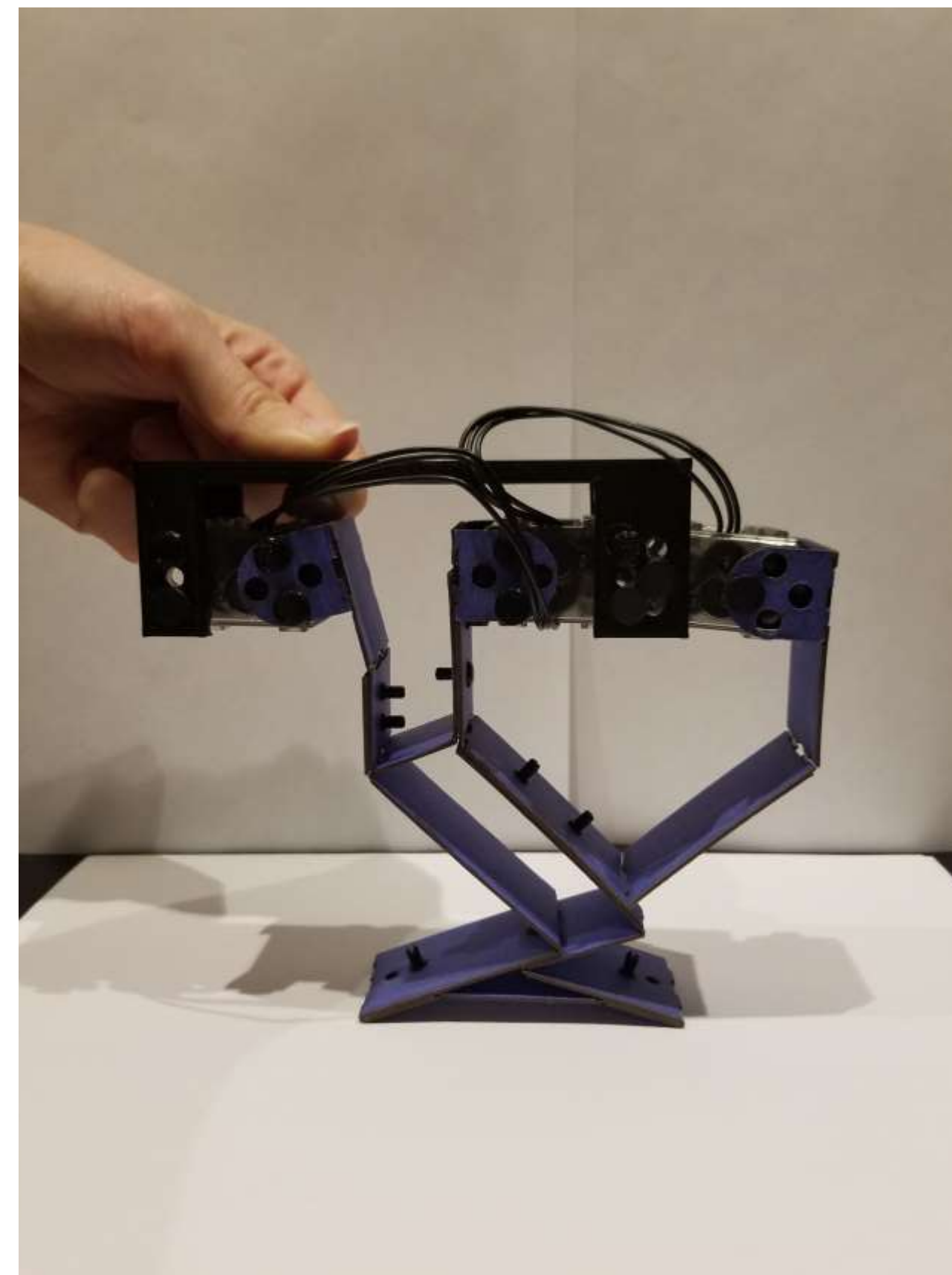
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## Purpose

Most robots are designed using rigid material. Although rigid materials are convenient to use because of their physical properties, these materials lead to high costs, which can ultimately hinder robotic systems from being more commonplace. By substituting the rigid material used to develop biped robots with laminates, I aim to create a fully controllable bipedal walking system that costs less than it would to develop the same bipedal system by using metals like steel.

## Early Design Stages



## Curiosity/Creating Value

A number of design iterations altered the structure so the center of mass became located above the foot. This process tied in with KEEN's 3 C's, where curiosity created value through improved designs.

## Future Work

The first step is to finalize the laminate bipedal design and get the system to balance. After the robot can stand using brute force programming methods, feedback closed-loop controls will be implemented to keep the robot's balance. To apply closed loop controls, a model must first be developed. Currently, a model for the system is being created assuming rigid body dynamics. Once equations are developed, closed-loop controls will be implemented to determine the optimal method for balancing.