

Design and Fabrication of Hexy: Plush Robotic Hexapod

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Motivation

The goal of the Hexy project is to create a plush robotic hexapod that is able to locomote using a standard tripod gait, while still retaining the “squishiness” inherent to plush toys.

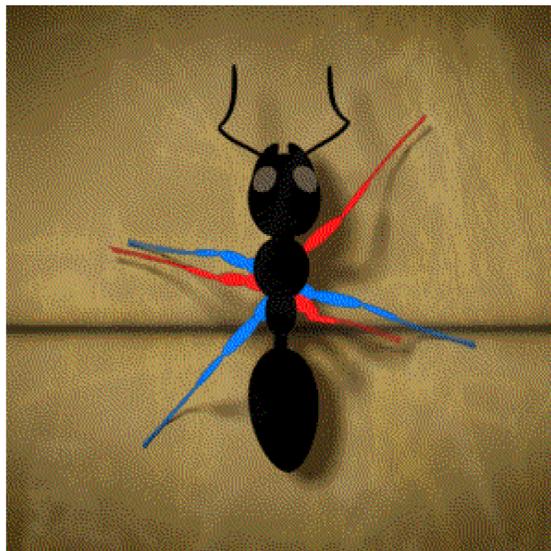


Illustration of tripod gait from Dr. John Meyer from NC State University

Design

Hexy is fabricated as a plush toy, and actuated via tendons.

- The bites enable the leg to deform reliably and predictably.
- The flat design of Hexy results in easy and reliable fabrication.

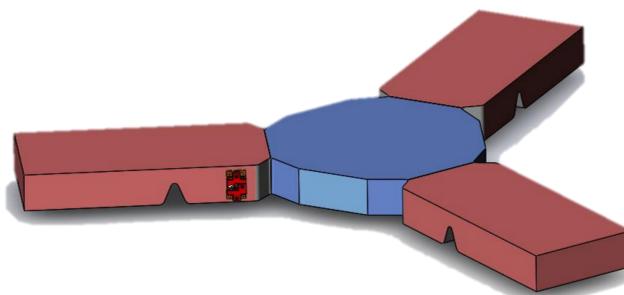
Results

- Preliminary fabrication test showed that adding bites reduced the force required to pull the tendon.
- Version 3 of Hexy is a complete proof of concept of one tripod.

Future work will combine two of these to produce the full Hexy.



Preliminary test of bites in the leg design.



Solidworks model versus fabricated model of Version 3 of tripod Hexy which tested the ability to walk; standing, relaxed, left and right positions.

Methods

- By leveraging traditional machine sewing techniques along with modern *3D printing* and *laser cutting*, copies of Hexy can be cheaply and easily made.
- Tests were performed on simplified *three-legged variants of Hexy* in order to demonstrate the individual use of these actuators.



Version 1 of tripod Hexy (above) tested the standing and relaxed position. Version 2 of tripod Hexy (below) tested the left and right positions.

