

SLABot: An Experiment in the Design of Soft Bodied Robots

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DESCRIPTION:

The Soft Locomotive Autonomous Robot (SLABot) is an experiment in the design of locomotion-capable soft bodied robots. The goal is to discover the simplest geometry and actuator arrangement that will produce complex behavior for movement through unstructured environments. SLABot is constructed of a 150x300x10mm slab of cast, open-cell, polyurethane foam. Motor-tendon actuators are arranged in a specific orientation to produce forward locomotion and steering. The tendons are laced through the foam slab and, when contracted, compress and buckle the slab revealing differential friction surfaces. Leveraging decoupled control of the buckling states and the linearly elastic – perfectly plastic nature of the highly deformable foam, the robot is capable of moving efficiently with any motor tendon arrangement.

Please refer to AMAM 2017 poster submission Kastor et. al., *Locomotion of a Simple Foam Robot*.



Left, the SLABot in its “home” configuration. Right, the robot buckles into a folded configuration when one of the motor-tendons is actuated.

VIDEO: <https://www.youtube.com/watch?v=bFqDc1qgUMM>

EQUIPMENT:

- Robot
- Laptop
- Power supply
- Microcontroller
- Wire harness
- Tool Kit
- Spare Parts

SPECIAL REQUIREMENTS:

- Table (30 inches x 72 inches)
- Access to power
- Power strip with at least 3 outlets.