

**Title:** Using Social Media to Crowdsourcing Control Strategies for Soft-bodied Robots

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**Abstract:**

Most man-made robotic systems are hard and inflexible, yet most animals are soft and flexible, giving the animals a number of advantages. Soft robots are able to achieve higher levels of biomimicry and are capable of large deformations not possible in traditional robots. However, the non-linear elastic properties of soft materials make it difficult to develop control systems for these types of robots, and there is no framework for identifying general control solutions for highly deformable moving structures. The goal of our research is to develop a web-based platform that will enable others to create control strategies for our soft robots. We have created a website that users can sign into using a social media account in order to control the Softworm, a soft caterpillar-like robot. Once logged onto the website, users can sign up for a time to control the Softworm, watch others control the Softworm, and interact with each other via chat and commenting on blog posts. While users are competing for achievements like “best time,” we are collecting information on their control strategies through video of the robot and a record of inputs. We analyzed the video to determine position, velocity, acceleration, segment angle, and segment deformation. Combining this information with the crowd sourced record of inputs, we can create case-based planning algorithms to determine the best control strategies for the Softworm, i.e. the strategies that take advantage of the intrinsic properties of that robot for a particular movement or sequence of movements.