

Optimization of a Robotic Fly

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The Harvard Microrobotics Lab has had incredible success in the creation flying robotic insects at sizes comparable to actual bugs. Over the course of the past couple years the design for a robot has been created and tested that can actually achieve lift and hover in midair, albeit while supported by a guidewire that prevents it from spinning out of control. So far in the project, all of the work that has been done to make all of the parts so efficient has been done through reasoning and calculation. Though many improvements have been made throughout the course of this project, there is still a lot of work to be done. Over the course of this summer, a Graphic User Interface has been made using MATLAB that allows a user to more easily use the existing calculations that predict the properties of the fly, like wing deflection and weight. This interface even has the ability to optimize the transmission and actuator of the fly based on over a dozen criteria selected by the user. Later, this GUI can be improved upon to do even more, like optimize multiple parts of the robot fly at the same time, or to consider other aerodynamic properties.

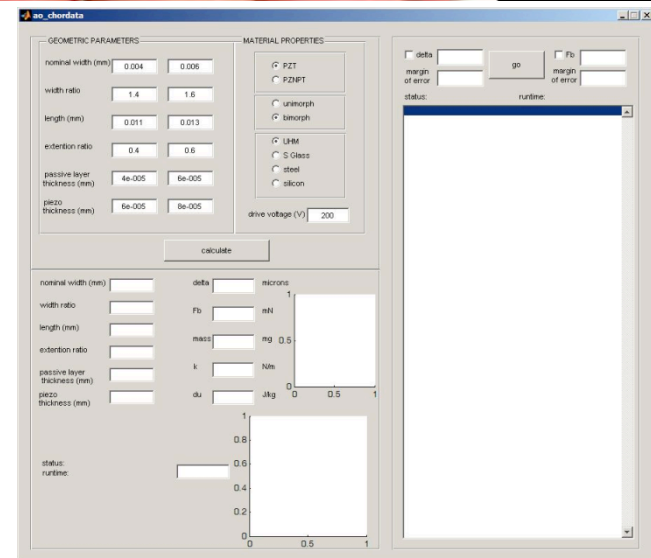
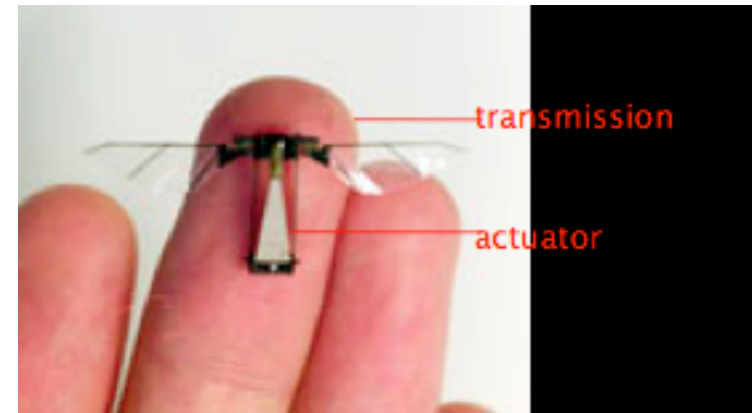


Figure 1: the Graphic User Interface (GUI) that has been created to allow easier optimization of the piezoelectric bending actuator of the microrobotic fly.

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