Flapping Wing Micro Air Vehicle

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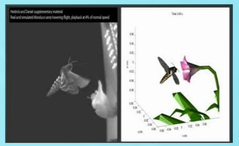
Background

FWMAV is a research that focuses on bringing the flight dynamic in birds and insects into the air vehicles. These miniature vehicles are used for indoor reconnaissance, surveillance, military purposes, and other applications.

The flapping insects or birds perform unconventional aerodynamic mechanism to generate high lift at low Reynolds number and also unconventional stabilization mechanism where they have to stabilize their bodies while flying to overcome disturbances.



Goals

System ID Team

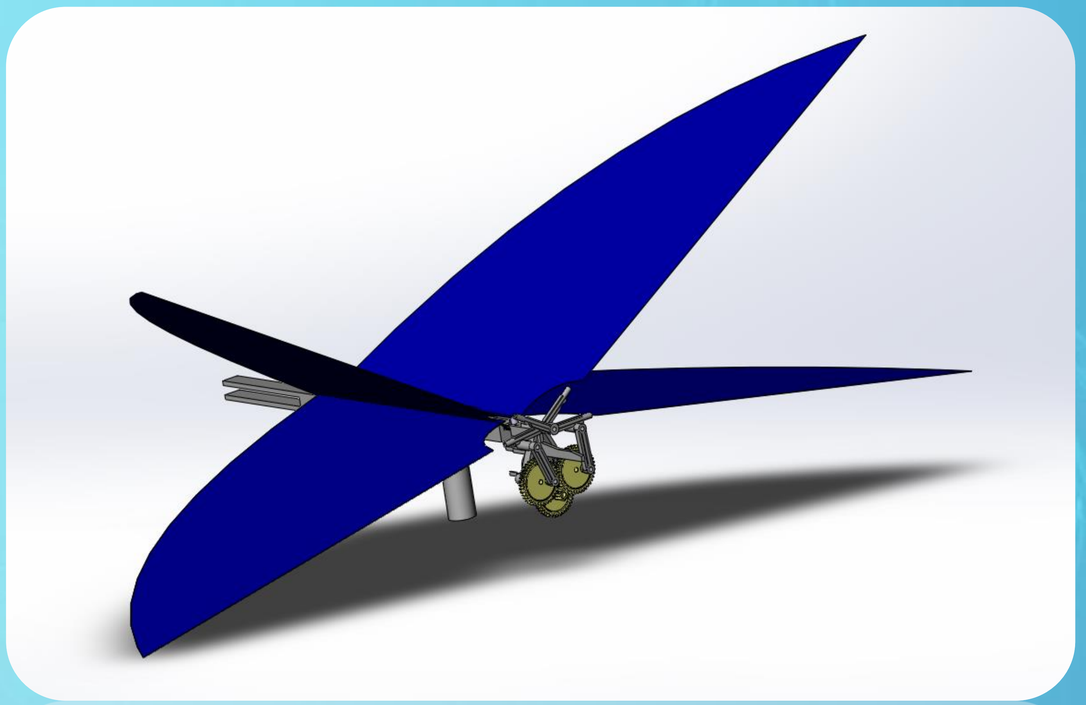
- To extract the damping coefficients of the pendulum system with FWMAV
- To complete the equation of motion for the system and compare with theoretical model

“Quadflapping” Team

- To design a quadflapper that exhibits innate stability without the aid of feedback control

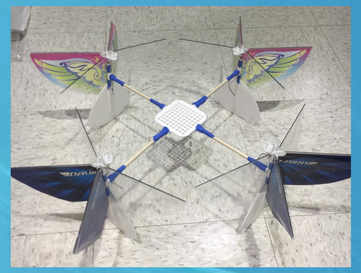
Design Team

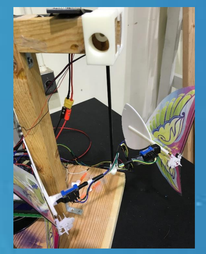
- To design a body that best fits with different motors for testing.

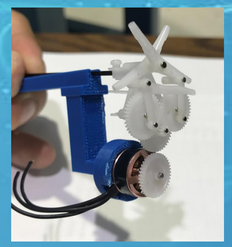


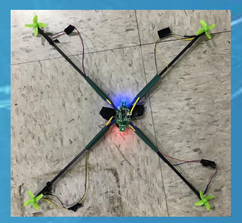
Innovation

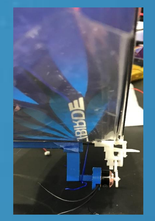
- Using sensor and Arduino to obtain the percent overshoot and settling time for the system
- Quadflapper!











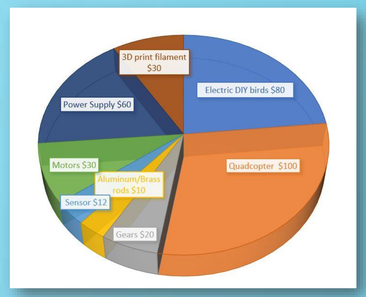
Requirements

- Light weight
- Less than 15 cm (6 inches) in length, width, or height
- Hover

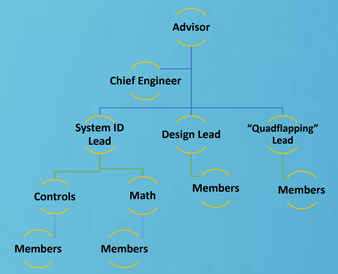
Next Steps

- Reduce weight/optimize motor speed with flapping gears
- Obtain equations of motion for 2DOF system
- New design for quadflapper

Budget & Spending



Team Organization



Team Members

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