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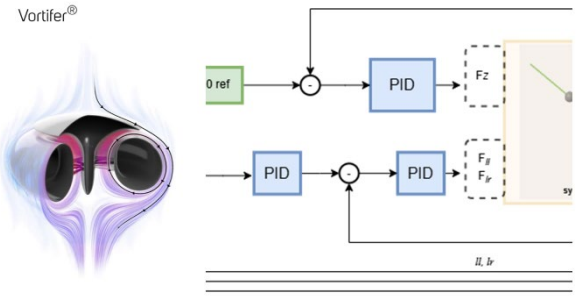
Bachelor/ Master thesis

Sensitivity Analysis of Physical Parameters on UAV Manoeuvrability

Understanding the impact of physical parameter variations on UAV behavior is critical for ensuring stable and responsive flight performance. This research investigates advanced control systems for the innovative Vortifer® drone. One approach under study is the moving mass system, and a sensitivity analysis will be conducted to evaluate its effectiveness and feasibility. Through a structured sensitivity analysis of physical design characteristics and control dynamics, we seek to identify key factors that influence flight efficiency. Given the Vortifier's swirling toroidal vortex propulsion system, it is essential to understand these dependencies to optimize control performance. The findings will provide valuable insights into improving UAV adaptability to variable payloads, environmental disturbances, and real-world operational conditions.



Your Tasks

- Study existing research on sensitivity analysis in aerial vehicles.
- Investigate how physical design characteristics affects stability and control response.
- Create a simulation environment to analyze the effect of the different designs.
- Implement control strategies to study responsivenes.
- Perform sensitivity analysis by varying the physical parameters and observing their effects.
- Quantify the impact of physical parameters variations on the responsiveness of the system.

Your profile

- Pursuing a degree in Electrical Engineering and Information Technology, Computer Science or Aeronautical Engineering with a strong focus on controls.
- Strong interest in control design and simulation.
- Experience with MATLAB, Simulink, and/or Python.
- Fluent in English.

Contact

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