

Acceleration Control of a Multirotor UAV Towards Achieving Microgravity

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Motivation

Conventional microgravity platforms like drop towers and zero-G aircraft are expensive and not easily accessible

Multirotor UAVs can be low-cost alternative if they can maintain free-fall acceleration (microgravity)

Objective

Design maneuver sequence to enable the multirotor to experience microgravity

Develop controller to maintain acceleration despite time varying drag and propeller performance

Methodology

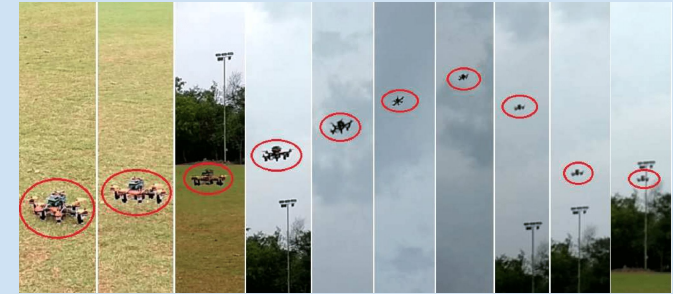
Feedback linearization control exploiting differential flatness of the system

Robust parameter estimation aiding the controller

Demonstration through field tests

Results

Snapshots of a microgravity flight test



Gravity experienced during flight tests

