HALO: Hazard-Aware Landing Optimization
(for Autonomous Systems)

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Motivating Applications

Planetary Landing: Landing on planets or moons where little to no a priori information is known about the environment and contingency landing sites are necessary.

Drone Package Delivery: Landing in uncertain scenarios where higher level-semantic knowledge on the current environmental state is necessary for a safe landing.

Introduction

Objective:
Develop a framework that enables autonomous aerial vehicles to land safely in unknown environments.

Contributions:
Two key algorithms developed and integrated (closed-loop) in the AirSim simulation environment:
1. Adaptive Deferred-Decision Trajectory Optimization (ADDTO)
2. Hazard-Aware Landing Site Selection (HALSS)

Perception

HALSS: Hazard-Aware Landing Site Selection

Path Planning

ADDTO: Adaptive Deferred-Decision Trajectory Optimization

Simulation Results

Video (YouTube)
GitHub

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