Seminar

Institute for Plasma Research

Title : Development of Control Algorithm for Co-operative Aerial Survey using Swarm UAVs

Speaker: Mr. Shivam Kumar Gupta
Institute for Plasma Research, Gandhinagar

Date : 4th May 2018 (Friday)

Time : 04.00 PM

Venue : Seminar Hall, IPR

Abstract :

This thesis addresses a dynamic time optimized coverage path planning (CPP) algorithm for a fleet of Unmanned Aerial vehicles (UAV) with failure redundancy. During path planning, the algorithm dynamically allocates different paths for N number of UAVs simultaneously; taking into account the user defined no fly zone(s) and obstacle(s). In case of one or more UAV failure during runtime, the algorithm populates multiple solutions to encompass the uncovered path. Based on an objective function, the algorithm distributes the uncovered path among the healthy UAVs and modifies their corresponding paths. The objective function is designed to calculate time optimized paths with minimum trajectory length for the remaining UAVs. The paper elaborates the CPP algorithm and reverse tracking issues incurred during path planning. Dynamic UAV failure redundancy is tested with multiple simulations cases. Other issues such as path planning in obstacle rich environment and UAV return to launch are also analysed.