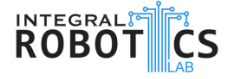INTEGRAL ROBOTICS LAB

INTEGRAL UNIVERSITY LUCKNOW

BACHELOR'S THESIS

UAV Motion Planning using OptiTrack, ROS and MATLAB

Project Description:

My aim is to implement motion planning and control systems algorithms like Model Predictive Control on a QuadCopter by integrating technologies like OptiTrack Motion Capture system and Robot Operating System to achieve precise and calculated movements of the inherently unstable QuadCopter platform.

Tasks Involved:

1. Setting up a distributed system to enable drone localisation using Motion Capture indoors.

2. Designing a suitable mathematical model of the QuadCopter in SimuLink suited to my research and control requirements.

3. Implementing Non-Linear Model Predictive Control using the designed mathematical model of the QuadCopter in SimuLink and making the QuadCopter able to follow setpoints as specified from MATLAB and SimuLink.

4. Implementing path planning algorithms for optimal trajectory generation and using the desingned Non-Linear MPC blockset in SimuLink to follow the trajectory optimally.

Supervisor:

Dr. Halima Sadia
Assistant Professor
Department of CSE

Start Date: 01/Oct/2023.

End Date: 01/May/2024.