Progress Presentation-I

e-Yantra Summer Internship-2018

Auto-tuning of controller (for Drone)

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Overview of Project

- **Project Name**: Auto-tuning of controller(for Drone)
- **Objective**: To propose a method of auto-tuning the PID and estimating the values of PID parameters. In this project, we will be trying to auto-tune the pluto drone.
- **Deliverables**:
  1. Appreciable auto-tuning of the control parameters and very stable waypoint navigation of pluto drone
  2. Documentation of comparing different auto-tuning techniques

Overview of Task

Task No.	Task	Deadline (in days)
1	Literature survey of present controllers -PID, Improved PID, LQR	2
2	Implementing PID and tuning PID parameters using Ziegler-Nichols method and testing on AR-Drone model using Gazebo	2
3	Designing a better control architecture for pluto drone for position holding using whycon marker and applying Ziegler-Nichols method to tune the pluto drone manually	5
4	Literature survey of autotuning and selecting a method	2
5	Implementation of auto-tune on the improved control system and testing on AR-Drone model in Gazebo	3
6	Implementing the auto-tune on plto drone using different techniques and comparing them.	14
7	Documentation	2

Task Accomplished

- **Prerequisites**: Learnt ROS
- Did literature survey of present controllers like PID , Improved PID and LQR
- Implemented a simple PID for position holding of AR-Drone model using Gazebo
- Partially completed implementation of a simple PID on pluto done

Challenges Faced

- Learning ROS
  1. Creating nodes that can communicate with the drone to subscribe and publish relevant data.
- Inconsistent arm and disarm of the pluto drone
- PID tuning
  1. Manual tuning of the PID parameters by hit and try method
  2. Using Ziegler-Nicols method

Future Plans

- Completing Task 3.
- Literature survey of autotuning and selecting a method
- Implementation of auto-tune on the improved control system and testing on AR-Drone model in Gazebo
- Implementing the auto-tune on pluto drone using different techniques and comparing them.

Thank You

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THANK YOU !!!