Hell-ix

INGENIA SE | COURSE 2022-2023

System Implementation

Hell-ix Team

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INDUSTRIALES
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Contents

1. Introduction

1.1   Purpose of the Document

The purpose of the present document is to detail the access to the implementation of the system of the Autonomous Drone Racing Challenge 2022-2023, that has been carried out by Hell-ix group. The implementation has been made in an external available repository in GitHub, so this document aims at providing guidance on the access to this mentioned implementation.

1.2   Scope and Overview of the Implementation

The implementation includes the different software files, simulations, documentation, etc. It also includes a user manual as well as a maintenance and operations manual in order to make the implemented system easy to use by the user, as well as easy to maintain and operate. This has been done by means of GitHub website utility, which enables a more user-friendly interface with the system implementation.

2. URL and Access Instructions to GitHub External Implementation

Next, two URL addresses related to the project repository and its manual, available on the Github domain, are provided.

- **GitHub Pages of the Hell-ix team.** This page serves as a manual that explains the different procedures to follow for the installation and use of the files stored in the repository. It also contains information related with the maintenance of the project and the drone.

- **GitHub repository.** It collects all the documentation and files necessary to recreate the progress made by the Hell-ix team.

2.1   GitHub Page

Access to the website is available by clicking on the following **link**. (If the images do not display correctly, please use the following **link**.)

The GitHub webpage includes different sections that cover all the available information of the project. First, there is a brief description of the project itself, as well as its main points of interest, including the Race Trajectory Planner used to establish the drone's trajectory, the Computer Vision that describes the on-board camera vision system used by the drone during the competition, and the Drone Competition Simulation Environment, which explains how to carry out simulations in the computational environment.

After that, the installation instructions for the necessary elements to replicate the project are provided, along with a series of tutorials that allow for the proper configuration of both the physical drone (assembly) and the connection between the drone and the computer.

Furthermore, it includes a direct link to the repository for downloading the necessary files, as well as other manuals related to usage or maintenance, among others. Following the steps

outlined in those manuals, the user will be able to download and execute the necessary files to replicate the project's progress, as mentioned earlier.

2.2   GitHub repository

Access to the repository is available by clicking on the following **link**. The Github repository is divided into different sections with the aim of facilitating information search. These sections are:

- · **Documentation:** It collects all the documents delivered throughout the project, including both final versions and early drafts.

- · **Hell-ix_Project:** It hosts files primarily used for creating the MATLAB System Composer Model.

- · **Simulation:** It contains the necessary files to run drone movement simulations.

- · **Software:** It gathers the remaining files used during testing and the competition. Within this section, you can find files related to freestyle testing, the testing phase, or those used for calculating the trajectory to follow, among others.

Finally, there may be other folders primarily used for the proper usage of the integrated documents on GitHub, such as the "img" folder that contains all the illustrations used on the project's GitHub Page.