**README**

The folder containing all the Simulink files used during the experience is organized as follows:

**Real System**

In this folder, there are all the Simulink files uploaded directly to the drone, i.e., the real system. They are divided into different folders depending on the specific controller they pertain to. In particular, each controller folder contains an **init\_control.m** file, which must be run before running Simulink, and two Simulink files: one called **controller\_HW.slx** and the other **controller\_HW\_EKF.slx**. The first file contains the non-filtered version of the controller, while the second file contains the filtered version.

**Simulation**

In this folder, there are all the Simulink files used to simulate the system. The files are grouped into several folders, each containing a specific controller. Here, you can find different files, including:

* **init\_control.m**: the file that must be run before running Simulink.
* **controller\_no\_noise.slx**: the file where an ideal feedback, i.e., noiseless, is assumed.
* **controller\_with\_noise\_control.slx**: a file where simulated noise, with estimated characteristics, is introduced, and the file is run with a quadcopter model designed by us (the same used for designing control).
* **controller\_with\_noise\_realistic.slx**: similar to the previous file, with the only difference being that the model used for simulation is more realistic, provided by Px4 libraries to simulate the system on a Visual Tool. While the previous file is used to tune our system, this one is used to get more accurate simulations to show the realistic effects of our control on the system.

**Note**

One last folder in the Simulation section is called **Noise**. In this folder, we have included both Matlab and Simulink files to extrapolate noise information from real data acquired during the experience and for designing the EKF, but not for tuning it.