

MICROCART 2014-2015

MATLAB Data Collection

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Introduction

The purpose of this document is to inform users about the data collection programs and scripts used from the ground station computer (co3050-09) in the Distributed Sensing and Decision Making Lab used for the MicroCART and OmniCOOR projects.

The purpose of the data collection task is to parse data logs from the MicroCART program, the OptiTrack IR Cameras, the SixChannelTrainer, and the OmniCoor vehicle. Some sample logs can be found in the "logs" directory of the matlab_data_collection task.

Each time the MircoCART program starts and stops a flight run, a log is created in the "ground_station_copy/Logs". Individual component files vary from implementation to implementation, but can usually be found in Ground/logs.

Files

-logs	Directory containing different logs
--log_crash.txt	Log flight data with the quad crashing
--log_realdata.txt	Log flight data of the quad flying
--Optitrack.log	IR Camera data log
--PID.log	Log of PID
--SixChannelTrainer.txt	Log of data from RC trainer
--Vehicle.log	OmniCoor readings?

-scripts	
--parse_log.m	
	A MATLAB script for parsing MicroCART logs (log_crash.txt and log_realdata.txt)
--parse_component_log.m	
	A MATLAB script for parsing all the different component logs

-run_microcart.sh

Program that runs the MicroCART program and automatically pulls up MATLAB with plotted data from the latest flight run.

NOTE: This program is only usable on the base station machine

Step-by-step Walkthrough

Running the run_microcart.sh script

1) cd into scripts location, matlab_data_collection

2) ./run_microcart.sh

2a) Perform at least one flight test (The most recent flight will be analyzed)

2b) Close out of MicroCART program

3) Wait for MATLAB to open up and appear with its plots

Running the parse*.m scripts

1) Open up MATLAB through a terminal by entering matlab &

2) Navigate the Current Folder to matlab_data_collection/scripts

3) In the MATLAB shell, enter: parse_log('../logs/log_crash.txt')

3a) log_realdata.txt also works

4) Enter: `parse_component_log('../logs/Optitrack.log')`

FAQ

Q: The MicroCART program doesn't show the pitch and direction arrows when I run the script. Why?

A: The QT GUI interface cannot perform all of its visual tasks if the program is not run from the location where the program is located. The `run_microcart.sh` script internally moves into the MicroCART location before running it so it should appear, but if it doesn't, please check the script and ensure the location of things are correct.

Q: I exited the MicroCART program, and nothing happens. Why?

A: Three possible things here: 1) MATLAB takes a little bit to open up, so it may take a few seconds for it to launch. 2) You did not run a flight test and the script cannot find flight data. 3) The script cannot find the flight data, please check the script

Q: Why is there an error with the MATLAB script when I run a parse script?

A: There are many reasons like the file may not exist, but the most common reason is that the log is not in its proper format that the script expects it to be.

Q: Ok? But how can I fix this?

A: Look at the log and ensure that it has a proper heading with the data column definitions above them. Looking at the script itself can provide some insight into what it's expecting.