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ASEN 4028

This document is written as a instruction manual for OSPRE team members who would like to run the C code in SIM mode.

1. Open a terminal program
2. Install github on your machine
3. Download the OSPRE repository or update old OSPRE code
   1. To Download Type: > git clone <https://github.com/seze4251/OSPRE>
   2. To Update: go to the OSPRE directory and type > git pull origin master
4. Install opencv on your computer:
   1. Tutorials located here: <http://docs.opencv.org/master/df/d65/tutorial_table_of_content_introduction.html>
5. Compile OSPRE
   1. Switch to OSPRE directory, type > cd OSPRE
   2. Run the compile script, type > ./makeAll.sh
6. Make sure test directory exists within the OSPRE folder, currently only a sample exists so you would need to drag/place the new test directory into OSPRE folder, can be done with command line cp –r or with Finder GUI
7. Update OSPRE\_Server\_Config.txt, GNC\_Config.txt, and Camera\_Controller\_Config.txt File to make sure OSPRE runs the correct data (Do not touch Skyfire\_J2000\_7\_ECI\_Epsecs.txt, it is for LIVE MODE)
   1. Switch to configuration Directory, type > cd Text\_Data
   2. Open OSPRE\_Server\_Config.txt
      1. Confirm OSPRE is in SIM mode (line 2 should say 2)
      2. Type name of the test directory in line 4
   3. Open Camera\_Controller\_Config.txt
      1. Update the pixel per degree values for the camera
   4. Open GNC\_Config.txt
      1. Update the initial Position guess to decide what method gets used (Components aren’t used for SIM mode but magnitude of the distance will decide whether OSPRE uses Earth Ranging, Angles or Moon Ranging)
      2. Update the Earth Ranging Cutoff and Angles Cutoff to get desired behavior, i.e.. if you want earth ranging, the earth ranging cutoff should be greater than the magnitude of the distance entered
8. Confirm that the test directory is set up correctly
   1. Test Directory should be in <relative path>/OSPRE/<test\_dir\_name>
   2. Check <relative path>/OSPRE/<test\_dir\_name>/Test\_Images
      1. Make sure that every image in Image\_Order.txt exists in the directory
      2. It is ok if there are extra images in the directory, only images in the Image\_Order.txt file will get analyzed by OSPRE
   3. Check <relative path>/OSPRE/<test\_dir\_name>/Test\_Data/
      1. Make sure there is data corresponding to every test image, each data row should have a different time stamp in Satellite\_Data.txt file
      2. Do not change the way the comments are set up in Satellite\_Data.txt
      3. Make sure the Kalman Filter Initial State has been updated by Cameron for the right simulated distance
      4. TruthData.txt is not currently used yet but will be used to compare OSPRE results with test results
   4. Check <relative path>/OSPRE/<test\_dir\_name>/OSPRE\_Results
      1. Delete all files in this directory, should be a GNC file, Spacecraft file, and Image Processing file
      2. This directory is where OSPRE results will go
9. Run OSPRE:
   1. Make sure no OSPRE processes are running on computer, i.e.. only follow these steps if this is a multiple run
      1. Type, > ps –e | grep bin/
      2. If you see stuff like bin/CameraController, bin/ScComms, bin/Spacecraft, bin/GNC or bin/ImageProcessor, manually kill them Type, > kill -9 <The Process IDs from the ps command>
   2. Type, >./runAll.sh
   3. Once Camera Controller has read in all the data and sent it to Image Processing, it will exit, but all the images may not have been processed yet
   4. Open a new terminal tab and go to <relative path>/OSPRE/log,
   5. Tail the Image Processing Log to find out when all the images have been processed, Type tail –f ImageProcessorLog\_13-04-2017.log
   6. Once no more output is being displayed on log for about 5 minutes you can assume OSPRE is finished running
10. Kill OSPRE:
    1. Determine which OSPRE servers are running, Type >ps
    2. Once OSPRE is done running, you must execute the kill script to kill the backgrounded servers that will run forever and interfere with subsequent OSPRE runs, Type > ./killAll.sh
    3. Verify that all OSPRE Servers that were running have been killed, Type > ps
11. View Results:
    1. OSPRE results are located in <relative\_path>/OSPRE/<test\_dir\_name>/OSPRE\_Results
       1. The Image Processor File contains alpha beta and radius results
       2. The GNC file has GNC results
       3. The Spacecraft file has GNC results as well as OSPRE status messages
    2. If there are less results than pictures, a exception was thrown and you should look in the OSPRE logs located in <relative\_path>/OSPRE/log
    3. Look at the Image Processor and GNC log, or just wait for Seth and make him fix it

I hope this clears up any confusion on how to run OSPRE, good luck guys.