

Artificial canopy with 36 high speed light sensors lab experiment system

Short instruction manual

(A)Basic concept on the operation of the system:

For the system to work,
we need to run the software on the raspberry pi side and the software on the HP laptop side.
They work with each other to make the system work._

(B)How to start the system:

- (1) Plug the power to the raspberry pi and PSOC microcontroller board.
- (2) Wait one minute for the Raspberry pi to connect to robotics wifi network.
- (3) On the Hp laptop, type “ping 172.22.0.66” in a terminal as test see if the ping is successful.
If not, repeat after 30 seconds. If successes, go to the next step.
- (4) On the Hp laptop, start roscore by typing “roscore” in a terminal.
- (5) On the Hp laptop, to login the raspberry pi on the control board,
start a new terminal, enter “ssh [ubuntu@172.22.0.66](#)” with password “ubuntu”.
- (6) Start the software at the raspberry end.
Start a new terminal, under the home directory of the raspberry pi terminal,
run the app script by entering “./runPiLightSensorPubi2c.bash”
now software part at raspberry pi end is running.
(You can use auto complete for entering the command)
- (7) Now we need to start the GUI control software at Hp laptop side.
Start a new terminal, under the home directory, run the script by entering
“./runStandAlongCompiledRQT_plugin.bash...”.
Then the software on the Hp laptop side is running.
(You can use auto complete for entering the command)

(C)Short instruction for using the GUI program to do a trial of sensor hit data collection:

- (0) Click "LED remain on after hit"
- (1) Click "reset LED off"
- (2) Click "auto cal local" to perform local calibration
- (3) Click "Start Recording"
(first square button from the top left)
to start collect sensor hit data.
Trial ID will be in the first edit box from the upper right.
- (4) Click the same button "Stop Recording" to stop the trial.
- (5) The log file will be located in
“~/fung_orchard_291116_ROS_kinetic_qt5_2017_9_15_2018_10_30_logFormat”
with file name: "lightSensorFile.txt"
- (6)
Log file format:
trialCounter [space] messageCounter[space] hitTime_ms[space] sensor_ID[space][new line].
- (7)
Click on the circular LED on the GUI to enable/disable the sensor with ID displayed in the circle.

picture edited by pinta

