

# **Raspberry Pi Teacher Workshop Overview**

**Ran by:** Clayton B. Coutu

**Shack Volunteers:** Sam Chun Yu Cheng and Troy Redshaw

Evaluation Form Averages: (17 responders)

- 1) I found the pace of the day appropriate: 4.4
- 2) The presenters were able to answer my questions: 4.6
- 3) The coding activities were rewarding: 4.3
- 4) I will be able to use the RPi with my students: 3.5
- 5) The morning snacks and lunch were good: 4.8

Teacher Response:

- Overall the teachers really enjoyed the experience. They learned a lot about what a Pi can do, and how to run simple Python scripts to collect, graph, and analyze data through a variety of sensors.
- With limited volunteers, some felt that it was difficult to get the help they needed.
- Unanimous agreement for a Python how-to workshop or introductory section. This is required to help the teachers feel more confident bringing these tools into their classrooms.
- Additional Terminal how-to tutorial at the beginning.
- The Doppler script had notable bugs. Primarily, the fast Fourier transform seemed to give the opposite results from expectation. Additionally, the lab manual section covering how to write these scripts is full of typos and requires a large number of edits in order to be usable as a sufficient walkthrough.
- Majority are interested in finding out more information about the UofA Physics Department, and how they could book lab tours and some physics demonstrations for their students.
- There was interest in running future experiments that involve magnetic fields.
- General agreement that this will be hard to bring into their classrooms after just the one workshop, as they will require a stronger python background in order to help their students. Additionally, the students need their own Pi's to have similar hands-on experience.
- Detailed parking instructions and discounts.

### Volunteer Response:

- Great fun! We really enjoyed the experience.
- Anticipate the lock-in of mouse's and keyboards, (caused a bit of a scramble in the morning to get these together.)
- More volunteers are required. Do to conflicting work schedules, we didn't get the numbers we were hoping for, but we had enough to get the job done smoothly.
- More vegetarian pizza! (Or healthy alternatives.)
- All the teachers got their IMU chips operational before leaving, (goal for IMU)
- All teachers got data from CVGT which they can now work with for practice, (goal for CVGT.)
- All teachers got data from Doppler, and had the chance to walk through the code to see how it works, (goal for Doppler.)
- Therefore, the pacing for the experiments went smoothly.

### Future Recommended Changes to the Workshop:

- 1) Remove Doppler until it has been fully debugged
  - o Correct typos in manual, and explaining zooming feature of GUI.
  - o Fast Fourier Transform from HoP is giving opposite results of expectations
- 2) Add in a python crash course at the beginning of the workshop where all the teachers are present. Instead of providing supplementary material for them to go over in their own time, make that a required part of the workshop. Or, provide a separate workshop dedicated to teaching programing and terminal applications.
- 3) After the Python tutorial, the teachers can be broken up into groups to run two different experiments.
- 4) Remove Time-delay edits to the IMU code in the lab manual, (caused bugs to show up from notation changes between C++ and Python.)
- 5) Check the Ribbon cables for CVGT as some did not work. This resulted in a large delay for the first group running the experiment.
- 6) Allow more time for CVGT data collection. Everyone was able to get a result, but having a bit more time could help get better data, and then have time to analyze it more thoroughly. In addition, provide a code to analyze their data for those short on time.
- 7) More volunteers will be required for future workshops. Sam and Troy really pulled their weight and made the workshop a success. Any fewer volunteers and things would have progressed a lot less smoothly. Additionally, more volunteers will help spread out the work, making it easier for us to help the teachers and not be burnt out by the end of the day.
- 8) Add a cost breakdown to the lab manuals.