Sense, Compute, Communicate, Actuate

These exercises are intended to help you master and remember the material discussed in lectures and explored in labs. In future semesters, we may make some or all of these exercises required, but for now they remain optional. We suggest that you do them as we go over the material, but you may also want to use them to review concepts before the exam.

We suggest that you use this version rather than the version without solutions to solve the problems before looking at the version with solutions. Many studies have shown that people often trick themselves into believing that they know how to solve a problem if they are presented with the answer before they try to solve the problem themselves.

1. [L19] A magician is performing a “magic” trick in which a wand hidden in their sleeve “magically” appears in their hand when the magician gives a verbal command. Give an example of each task being performed by the magician as part of this trick.
   A. Sense:
   B. Compute:
   C. Communicate:
   D. Actuate:

2. [L19] Give three examples of sensors that might be useful in digital agriculture. For each sensor, include a sentence or two explaining how that sensor can be used.

3. [L19] In a sentence or two, explain why lenses are an important part of a camera.

4. [L20] In a sentence or two, explain why microphones used to capture human speech and music include a filter.

5. [L20] How do sensors such as lidar and radar obtain depth information about the points in the results they produce?

6. [L20] What effect makes GPS less reliable when outdoors in urban areas?