

ISCI 3IE1: Electronics for the Rest of Us

Final Reflection

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The course drew on various fundamentals of electronics that were all used to design a final creation using Arduino. In addition, past knowledge of music theory, electrodynamics, and computer science were used throughout the course. It was interesting to see how all these fields came together in our final deliverable.

Our device achieved the following three functions: 1) it turned on green and red LED lights when a decrease in light was detected by a photosensor, 2) it played a short segment of "Jingle Bells" when the temperature sensor detected an external temperature below 15°C, and 3) it rotated a servo motor and turned on 3 LED lights attached to it when a switch was flipped on (see attached pictures as well as video links).

On top of practicing skills like circuit wiring and coding, participating in this course also demanded a large amount of problem solving. For example, by using example code from the internet we were guaranteed a basic template for creating programs that would do what we wanted, however we found that merging and scaling this source code often created issues that we had to solve through clever changes to code timing, or by running portions of code separately. At times we also found that the materials we had been provided could not do what we wanted them to do, so we had to look around for materials which we could change to meet our demands.

Communication between groupmates was also crucial to the success of our project. We often found that different people in the group brought different solutions to different problems. It was also a lot more manageable to go through difficulties in our project with a group of people. Often we encouraged each other to keep going when things didn't work out or we were stumped by some problem.

As the presence of computers in our lives increases by the day, understanding how basic electronics work will be an asset for any research or career roles we find ourselves involved with in the future. Understanding how code is interpreted by a computer and knowing the basic syntax for Arduino (similar to many other coding languages) is also a great starting point for future studies in computational programming. Of course, in a more general sense, the aforementioned problem solving and collaborative skills can be applied in virtually any academic or workplace environment.

Videos

<https://youtu.be/Vm2nYG9tF1w>

<https://youtu.be/3b-2OMuYfe8>

<https://youtu.be/eGLkwydsdiY>

Pictures

