

## Digital Media Off-the-Grid

LCST 2454, Spring 2021 (CRN 8800)

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### Project 1 : Environmental circuit / circulation

Create an Arduino-based circuit that participates in its environment. Think back to our discussions about the way that all circuits have a circular aspect, a kind of closed loop through which electrons leave a power source and flow through conductors back to ground. Also think back to the Vannini and Taggart book and documentary that discussed life off-the-grid, and the ways that the people depicted dedicated much energy and attention to the various ecological cycles around them: water, waste, food, air, energy. (Also information and communication, but we'll save those themes for project 2.) Think about the various devices and techniques that these subjects used for monitoring and managing these circulations – the meters, monitors, valves, and switches for observing and controlling these flows. Using hardware techniques that we have discussed in the workshops this semester, build a circuit that uses inputs (sensors) and outputs (LEDs, sound, actuators) to explore these themes.

Your project will likely not be a “true” ecological intervention in that you won't actually be utilizing or managing a self-reliant, closed loop of resources. Your circuit will likely draw power from the electrical grid via a USB connection rather than being sustained through solar. You are in fact on the grid after all. Given these limitations, your project will be more like an example of critical design rather than an actual solution to an off-grid situation. Think carefully about what this type of intervention can do. In your write-up and discussion, foreground these limitations rather than hide or minimize them, being clear about what someone might learn from this project, or what you learned in working on it.

### Process

You can use any of the components that came in your kit. You should also consider going beyond these materials. Look through the extensive list of sensors on the Adafruit website:

<https://www.adafruit.com/category/35>

This includes electrical components that could be used to sense: temperature, moisture, air quality, touch & pressure, position & orientation, sound, movement, light, and others. Using any of these will entail planning ahead and ordering them for shipping. I also have some related sensors I could give or loan via the mail. I can help you integrate any of these components. If you're not sure whether using one would be possible, please ask. Some of these use more advanced principles than what we've discussed this semester.

Next, determine what you might want to do with these inputs. You might use them to control multi-colored LEDs, to produce sounds, to move a servo motor, or something else.

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## **Dates**

*Assigned: Tuesday, March 2*

*Concept write-up due: Friday, March 12, 8pm*

*In-class presentation & discussion: Tuesday, March 23 or Tuesday, March 30*

*Final write-up & documentation due: Monday, April 5, 8pm*

## **Concept write-up**

300-500 words. Clearly indicate the various components **that** you will be using. Include URLs for any sensors that you plan to acquire, if applicable. Include 1-2 diagrams. These can be schematics or any form of planning sketch. What is the question that you wish to investigate? What might this project teach you or your audience about this question?

## **In-class presentation & discussion**

We will have two days of in-class project share & discussion. Create a presentation of 3-5 slides or equivalent sharing your project concept, your goals or the question(s) you are investigating, and documentation of your process. Share a functional demo if possible, or some documentation of operation.

Based on in-class discussion, you should continue to develop & refine your project until the final due date. I will randomly generate the list of people for each day. If you have a need to go one day or another, please let me know. Going on the first day means you must be ready earlier but will have more time after presenting to refine & finalize your work; going later means more time to prepare and less time to follow up.

## **Final write-up**

1500-2000 words. Recap your initial concept, questions, and goals of this intervention. Incorporate discussion of at least two readings from the course so far, properly cited. You can include some first person experience, but you shouldn't simply narrate your project development process. Rather, frame your discussion in terms of concepts that we've been discussing this semester and discuss your project as a kind of experiment that engages these concepts: as an example, as evidence, as counter-example, or something else. You may quote yourself by incorporating commentary from your Lab Notebooks. If you do, cite these as you would primary evidence.

Submit your work as a Microsoft Word or Google Doc, uploaded into your Google Drive folder. Name your file as "Project 1 write-up", and make sure all your Lab Notebooks are present and clearly labeled for me to review.