Overview

Course: CS 73: Code, Data, and Art
Course Level: Introductory undergraduate
Course Description: “A studio course where software is used as an artistic medium. The course is designed to expose students to current perspectives on the intersection of computer science and art, and to build skills that will allow them to express themselves creatively via software. An additional focus will be the role of data in modern artistic practice.”

Module Topic: Ethics of Data Visualization: Emotion and Manipulation
Module Author: Anni Räty
Semesters Taught: Fall 2023
Tags: feminism [phil], manipulation [phil], rationality [phil], trust [phil], trustworthiness [phil], data visualization [CS], data graphics [CS], design [CS], visualization [CS]

Module Overview: This module focuses on ethical issues in data visualization. Principles of data visualization have historically emphasized clarity and rational persuasion. Feminist work on visualization challenges these principles, and guides practitioners to elevate emotion and to understand data graphics as a communicative medium. In this module, students navigate this dialectic and reflect on the aims and responsibilities of data visualizers and data artists. The module introduces students to philosophical accounts of manipulation. In class activities, students use these accounts to assess and evaluate their own and others’ visualization work.

Connection to Course Material: The module follows up on a lecture on Data Feminism and the role of emotion in data visualization. Prior to the module students have completed a number of homework projects and studio critiques. This module was initially conceived of as a module on Data Feminism, similar to prior modules delivered in CS171. This material and related material on emotion in data visualization was covered in prior class sessions with the professor. Future iterations of the module could either cover this material, or reframe the module introduction to focus only on the question of manipulation in visualization.

Goals

Module Goals: 1. Familiarize students with the dialectic between principles of graphical integrity and feminist work on data visualization.

1 https://seas.harvard.edu/computer-science/courses
2. Familiarize students with the notions of manipulation and rational persuasion.
3. Practice identifying and evaluating graphical choices.
4. Practice identifying ways in which data graphics can appeal to emotion.

**Key Philosophical Questions:**
1. What is manipulation?
2. What is rational persuasion?
3. How can data visualizations persuade responsibly?
4. How can data visualizations appeal to emotion?
5. Are data graphics a scientific instrument?

Before this module, students are introduced to the idea that data graphics appeal to emotion, and that data graphics are communicative (as opposed to scientific) instruments. In the module students consider what values should guide data visualization. In this module students learn about the difference(s) between manipulation and rational persuasion. In class activities students apply these concepts to particular cases, and use them to propose principles of responsible data visualization.

**Materials**

**Key Philosophical Concepts:**
- Manipulation
- Rationality
- Deception
- Emotion
- Autonomy
- Harm
- Objectivity

In this module students are introduced to four different views of manipulation. These views explain manipulation in terms of harm, undermining of autonomy, covert influence, and bypassing rationality. In class activities students use these views of manipulation to identify and evaluate graphical and design choices.

**Assigned Readings:**

The chapter from Data Feminism argues that data graphics are not objective scientific instruments, and prompts practitioners to elevate embodiment and emotion. The chapter on online manipulation summarizes four influential views of manipulation. These views are used in class to prompt reflection on what
manipulation is, and when/why it is morally problematic. Although the topic of the text is online manipulation, the views translate very easily to other domains.

### Implementation

**Class Agenda:**
1. Overview and tie in to class session on emotion
2. “Clarity without persuasion” as an aim for data visualization
3. Persuasion and rhetoric: data visualization as communication
4. Manipulation: outcome and process views
5. Group exercise: is this visualization manipulative? What would make it more/less so?

**Sample Class Activity:** During the module students are introduced to four philosophical views of manipulation. For each view, students are asked to give examples of actions that are, and are not, manipulative according to the view. Students are then given sample data graphics to discuss. Students are asked to identify graphical choices that make the visualization manipulative (or not), and to identify changes that could be made to the graphic to make it less manipulative.

**Module Assignment:** This class has regular critique sessions where students present and discuss their own data visualization projects. As a follow-up assignment, students include an ethical reflection of their work as part of their critique presentation(s). In the reflection, students
   (i) explain the ethically relevant graphical choices they have made.
   (ii) explain their positionality as it relates to the work.

**Lessons Learned:** Student response to the module was overall positive. The module was well attended (approx. ≈⅔ of class present) and discussion was lively.
- In discussion, several students referred to their own visualization projects and to graphical choices that they had made during these projects. The students’ own work could be a more central focus of the module, when it is taught in a studio class like CS73.
- Depending on class size for future iterations of the module, class activities could be conducted with the entire group.

In future iterations of the module, students might bring in their own visualization projects for this class activity.

This assignment requires that the students are working on another class project, which may not be the case (if e.g. the module date is very early).