

Inf2 - Foundations of Data Science 2022

Task: Preparation for S1 Week 3 Workshop - Ethics and Data Science

In the S1 Week 3 workshop, we will explore ethical challenges in data science, focusing on two case studies from the module *An Introduction to Ethics* by Shannon Vallor. In the workshop, you will be working in small groups. We will give each group a set of questions relating to the case studies to discuss.

The preparation for the workshop is, individually, to

- Read Parts 1 and 2 of Vallor's [An Introduction to Data Ethics](#)
- Read "Case study 1" and "Case study 2" that appear below.

If you have questions or thoughts about the material, feel free to put them on Piazza.

Case Study 1: Facebook

In 2014 it was learned that Facebook had been experimenting on its own users' emotional manipulability, by altering the news feeds of almost 700,000 users to see whether Facebook engineers placing more positive or negative content in those feeds could create effects of positive or negative 'emotional contagion' that would spread between users. Facebook's published study, which concluded that such emotional contagion could be induced via social networks on a "massive scale," was highly controversial, since the affected users were unaware that they were the subjects of a scientific experiment, or that their news feed was being used to manipulate their emotions and moods.

Facebook's Data Use Policy, which users must agree to before creating an account, did not include the phrase "constituting informed consent for research" until four months after the study concluded. However, the company argued that their activities were still covered by the earlier data policy wording, even without the explicit reference to 'research.' Facebook also argued that the purpose of the study was consistent with the user agreement, namely, to give Facebook knowledge it needs to provide users with a positive experience on the platform. Critics objected on several grounds, claiming that:

- A) Facebook violated long-held standards for ethical scientific research in the U.S. and Europe, which require *specific* and *explicit* informed consent from human research subjects involved in medical or psychological studies;

- B) That such informed consent should not in any case be implied by agreements to a generic Data Use Policy that few users are known to carefully read or understand;
- C) That Facebook abused users' trust by using their online data-sharing activities for an *undisclosed and unexpected purpose*;
- D) That the researchers seemingly ignored the *specific harms* to people that can come from emotional manipulation. For example, thousands of the 689,000 study subjects almost certainly suffer from clinical depression, anxiety, or bipolar disorder, but were not excluded from the study by those higher risk factors. The study lacked key mechanisms of research ethics that are commonly used to minimize the potential emotional harms of such a study, for example, a mechanism for debriefing unwitting subjects after the study concludes, or a mechanism to exclude participants.

Case study 2: OK Cupid

In 2016, two Danish social science researchers used data scraping software developed by a third collaborator to amass and analyze a trove of public user data from approximately 68,000 user profiles on the online dating website OkCupid. The purported aim of the study was to analyze “the relationship of cognitive ability to religious beliefs and political interest/participation” among the users of the site.

However, when the researchers published their study in the open access online journal *Open Differential Psychology*, they included *their entire dataset*, without use of any anonymizing or other privacy-preserving techniques to obscure the sensitive data. Even though the real names and photographs of the site's users were not included in the dataset, the publication of usernames, bios, age, gender, sexual orientation, religion, personality traits, interests, and answers to popular dating survey questions was immediately recognized by other researchers as an acute privacy threat, since this sort of data is easily re-identifiable when combined with other publicly available datasets.

That is, the real-world identities of many of the users, even when not reflected in their chosen usernames, could easily be uncovered and relinked to the highly sensitive data in their profiles, using commonly available re-identification techniques. The responses to the survey questions were especially sensitive, since they often included information about users' sexual habits and desires, history of relationship fidelity and drug use, political views, and other extremely personal information. Notably, this information was public only to others logged onto the site as a user who had answered the same survey questions; that is, users expected that the only people who could see their answers would be other users of OkCupid seeking a relationship. The researchers, of course, had logged on to the site and answered the survey questions for an entirely different purpose—to gain access to the answers that thousands of others had given.

When immediately challenged upon release of the data and asked via social media if they had made any efforts to anonymize the dataset prior to publication, the lead study author Emil Kirkegaard responded on Twitter as follows: "No. Data is already public." In follow-up media interviews later, he said: "We thought this was an obvious case of public data scraping so that it would not be a legal problem."

When asked if the site had given permission, Kirkegaard replied by tweeting "Don't know, don't ask. :)"

A spokesperson for OkCupid, which the researchers had not asked for permission to scrape the site using automated software, later stated that the researchers had violated their Terms of Service and had been sent a take-down notice instructing them to remove the public dataset. The researchers eventually complied, but not before the dataset had already been accessible for two days.

Critics of the researchers argued that even if the information had been legally obtained, it was also a flagrant ethical violation of many professional norms of research ethics (including informed consent from data subjects, who never gave permission for their profiles to be used or published by the researchers). Aarhus University, where the lead researcher was a student, distanced itself from the study saying that it was an independent activity of the student and not funded by Aarhus, and that "We are sure that [Kirkegaard] has not learned his methods and ethical standards of research at our university, and he is clearly not representative of the about 38,000 students at AU."

The authors did appear to anticipate that their actions might be ethically controversial. In the draft paper, which was later removed from publication, the authors wrote that "Some may object to the ethics of gathering and releasing this data...However, all the data found in the dataset are or were already publicly available, so releasing this dataset merely presents it in a more useful form."