

1. Identification risk in anonymized data.

(a) Pick two of the examples in Table 1 and describe in one or two paragraphs how the re-identification attack in both cases has a similar structure.

Narayanan and Shmatikov (2008) develop a re-identification attack algorithm and apply it to the Netflix movie rating data, revealing the failure of Netflix's efforts to keep the data anonymous. Zimmer (2010) mentions the de-anonymization of the college students facebook data used and released by the T3 research team. The re-identification attacks in the above two cases share three structural similarities.

To start with, both re-identification attacks work without traditional identifying information, such as names, addresses and unique identifying numbers. More importantly, one "anonymous" data set can become identifiable through being linked to other public and non-sensitive information. In addition, to re-identify the targeted data, very little auxiliary information is needed. In the Netflix case, with the help of 8 public movie ratings and rough rating dates of the targeted Netflix users, "99% of records can be uniquely identified in the dataset." (Narayanan and Shmatikov 2008, p.121) For the facebook case, simply through linking the codebook to several public comments, Zimmer (2008a, 2008b) quickly identifies the data source as Harvard College.

(b) In one or two paragraphs, describe how the data could reveal sensitive information about the people in the dataset for each of your two examples in part (a).

The Netflix movie rating data could reveal sensitive information of individuals in the dataset regarding their political and religious views as well as their sexual orientation. As Narayanan and Shmatikov (2008) point out, these potentially sensitive personal attitudes can be revealed through the manifested preferences over movies with certain themes or stances. According to Zimmer (2010), the demographic, administrative, and social data about Harvard College students include sensitive information such as the students' political views, cultural tastes, social relationships, email addresses and housing information.

2. Describing ethical thinking.

In response to the criticisms regarding the privacy protection of the subjects in the T3 research data, Kaufman (2008a, 2008b) defends his research team based on the consequentialism ethical framework. According to Zimmer (2010), Kaufman first notes that as a group of sociologists, his team cares the most about contributing to the body of knowledge on social network through gleaning as much as possible information about their research subjects. Besides, they are not entirely clear about the ramifications of their operations, since compared with technologists, they are not familiar with the use of social media data.

In line with the consequentialism framework and the principle of beneficence, Kaufman further argues that their data collection and publication will not pose harm to the research subjects, as all their data come from the public platform facebook and are “anonymized” and well protected. Without their dataset, a hacker could as well get access to the same information he/she wants by cracking facebook. Besides, they assume that it would be extremely difficult to break through their protection and crack their data.

Viewing from the perspectives of two ethical frameworks and four principles raised by Salganik (2018), Kaufman’s comments are untenable. Built only on the consequentialism framework, his stance can be easily challenged by the deontology framework. The means his team adopts to make academic contributions are essentially problematic. One notable aspect is their violation of the Respect for Persons principle. Kaufman keeps emphasizing that his team do not need to gain consent from the subjects as all the information are originally made public by them on facebook. Yet, making information available to members of the same network does not mean that the students also agree to get those information exposed to the general public. Hence, the research team needs to acquire the consent of the students before using and releasing information collected from their facebook profiles. Moreover, as Zimmer (2010) argues, Kaufman’s justification “ignores the broader dignity-based theory of privacy.” (p.321) The privacy of personal information per se should be taken into serious consideration even if the invasion of privacy would not bring tangible harm to the subjects. Therefore, under the deontology framework, Kaufman’s research team does not fulfill their obligation to recognize

and respect the research subjects' autonomy. Besides, as Salganik (2018) points out, considering the principle of Justice, the T3 research team does not compensate for the Harvard College students who bear the cost of the research yet do not directly benefit from it.

Even if we take a consequentialist stance, the T3 research team fails to fulfill the requirement of the Beneficence principle, as their data anonymization efforts are far from enough to protect the subjects from potential harm. It turns out to be incredibly easy to locate their data source and then reveal sensitive personal information of the students.

3. Ethics of Encore

(a) Write a one-half-to-one-page summary of Narayanan's and Zevenbergen's assessment of the Burnett and Feamster (2015) Encore study. Make reference to the consequentialist framework and to the principle of beneficence.

Narayanan and Zevenbergen (2015) evaluate the ethical quality of the Burnett and Feamster (2015) Encore study from five perspectives: ethical inspection of stakeholders, beneficence, informed consent, transparency and accountability, and legal compliance. (p.8-9)

Whether the Encore study is a human-subject research or not is controversial under the current standard definition. But as Narayanan and Zevenbergen (2015) point out, even though what the Encore study directly targets and studies is the censorship system rather than the internet users identified by their IP addresses, the operation of the study can generate negative impact on those users involved. Such ethical concern has its roots in the consequentialism framework and the principle of beneficence, which are also the analytical lenses for the second part of the assessment.

The essence of the beneficence principle is to maximize possible benefits and minimize potential harm. According to Narayanan and Zevenbergen (2015), the Encore study do bring about considerable benefits, either in the form of academic contribution or in "enhancing the ability to create effective censorship circumvention tools." (p.11) The study might also give rise to harmful consequences regarding certain individuals or countries. For example, a web user in an authoritarian state might get into trouble owing to the linkage between his/her IP address and

political sensitive websites. In response to the prevalence of the Encore operations, censors in some countries might also go to the extreme to shut down internet connectivity. In order to mitigate the potential harm, the research team limits the Encore tests to certain URLs that are normally and commonly accessed by most web users.

As for the perspectives of informed consent and transparency and accountability, Narayanan and Zevenbergen (2015) mainly discuss how the Encore research team could improve their ethic quality through mitigating potential harm in these two aspects. Narayanan and Zevenbergen (2015) generally suggest that the Encore research team should take more actions to strengthen the web users' awareness that they are participating in the Encore research and can opt out future participation. These concerns and suggestions still rest on the consequentialism framework.

In terms of legal compliance, Narayanan and Zevenbergen (2015) hold that while the Encore study does not violate any law in the U.S., it might not be the case for the local laws of other countries and regions involved in the study. Yet it is not viable for the research team to comprehensively study the local laws and policies of all regions before their experiments. Hence, what they can do to improve their ethic quality is to “demonstrate that they accept responsibility for their actions and the consequences, and have the necessary mitigation strategies in place.” (Narayanan and Zevenbergen 2015, p.16)

(b) In one or two paragraphs, write your assessment of the ethical quality of the Burnett and Feamster (2015) Encore study.

Narayanan and Zevenbergen (2015)'s assessment of the Burnett and Feamster (2015) Encore study centers on the consequentialism framework. Here I will complement their arguments with my evaluations based on the deontology framework. Viewing first from the informed consent perspective, Burnett and Feamster (2015) rebut criticisms using arguments based on the consequentialism framework and feasibility concerns. Narayanan and Zevenbergen (2015)'s critique on this point also lies in the consequentialist thinking: web users in certain country may get into trouble even if they unknowingly and automatically (rather than consent to) open the censored webpages. From my point of view, regardless of the consequences, not informing and gaining consent from the web users is ethically problematic per se. The Encore study fails to

fulfill their ethical duty to recognize and respect the autonomy of web users and hence violates the Respect for Persons principle.

Moreover, considering the principle of Justice, it is unethical to let the web users alone bear the risks brought to them by the study, while only the society as a whole might benefit from the study. The web users involved in the study should be compensated for the uneven distribution of burdens.

References

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