

Chapter 12

Technology, Ethics, and Elements of Pervasive Digital Footprints

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ABSTRACT

Philosophically speaking, technology has evolved primarily as an ethically agnostic construct with the emphasis being placed on how well the technology works rather than how the technology affects its users. This “practical rather than ethical” focus presents special concerns when considering data that are intimately attached to an individual. Law enforcement increasingly uses investigative genetic genealogy (IGG) cross-matched with commercial DNA databases to definitively identify perpetrators. This overlap between judicially overseen data and commercially obtained data creates ethical issues surrounding an individual’s right to privacy and informed consent. While the ethical use of GPS data has been debated since the emergence of location tracking, devices that are easily carried on an individual’s body add an intimate understanding of not only where that individual has been but inferences about their motivation for going there. DNA databases, biometrics, and GPS tracking data are explored here as they pertain to ethical concerns related to personal autonomy.

INTRODUCTION

To properly examine the ethical issues surrounding technology that can identify an individual and their movements, some definition and distinction between ethics and rights must be made. Any ethical construct must establish whether a given action violates fundamental ethical principles in some manner. Questions to be asked might include whether the action causes harm to an individual or whether the

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action somehow exploits the individual to the benefit of others. A deeper examination of such questions exposes the potential consequences of the action to determine whether beneficial consequences to the individual are outweighed by harmful consequences (“DNA Technology in Forensic Science,” 1992).

For example, Smith and Miller (2021) note that DNA is inherited and thus carries with it the risk that other individuals, besides the subject, may be implicated in any examination of the subject’s DNA data. Further, DNA can extract health information that might impact the subject’s ability to obtain insurance or even employment in some fields.

Ethics are not quite the same thing as rights, although the concepts are certainly related. An individual’s rights in relation to a given technology are usually determined judicially. Examples of judicially defined rights to personal data, such as DNA, include the General Data Protection Regulation (GDPR) and the Health Insurance Portability and Accountability Act (HIPAA). Involuntary DNA collection has been ruled by the European Court of Human Rights to be an invasion of privacy, constituting the violation of an individual’s reasonable expectation of privacy (Tuazon, 2021). While the voluntary collection of DNA material would not necessarily fall under this protective legal umbrella, once the DNA is stored in a commercial database, such as that maintained by AncestryDNA®, usually some sort of use or principles statement is provided (“Ancestry Guide,” n.d.).

Given the practitioner emphasis of technology, it makes sense to examine the ethics of technology in applied form. Taking the framework of the judicial rights of a user of technology, most vendors of various technologies either provide some sort of statement of ethical principles, such as Google’s “Don’t Be Evil” code of conduct or attempt to code ethical principles directly into the algorithms used by software. While the former ethical framework has its weakness in depending on the user to follow the principles, the latter concept also has some serious weaknesses. As Green (2021) notes, “In 2016, ProPublica revealed that an algorithm used in criminal courts was biased against Black defendants, mislabeling them as future criminals at twice the rates of white defendants” (p. 210).

Facebook (also known as Meta©) has frequently been taken to task for deliberately allowing bias to be used by advertisers. Hao (2019) describes Facebook job postings for teachers being shown to higher percentages of women job seekers while job postings for janitors are more often shown to minorities. Although it is beyond the scope here to examine all the various means by which bias creeps into algorithms, the most obvious culprit is the manner in which machine learning (on which many algorithms are based) seeks patterns found in massive amounts of data then leverages those patterns for decision making. For example, when an advertiser sets up a Facebook ad, they are given a choice of objectives such as the number of views given the ad, the amount of engagement with the ad, and the number of sales generated by the ad. These choices are disconnected from any humanly selected form of bias, but bias is still introduced because if the algorithm determines it will generate more engagement by showing the ad to a particular demographic, then discrimination against other demographic groups will naturally occur. (Ali et al., 2019)

Tsamados et al. (2021) explicitly state that “algorithms are not ethically neutral” (p. 215). They warn that despite growing attempts to address these ethical issues through design, “the number of algorithmic systems exhibiting ethical problems continues to grow” (Tsamados et al., 2021, p. 215)

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