

## *Internet of Heads*

### **Outline**

The theme of this essay is a fictitious case of a wonderful application of science and technology that was originally ethically permissible to apply for the sake of improving prevention and treatment of neurological diseases. The case progresses into a situation where the technology is applied in commercial and non-medical settings. Opposed to the original context of disease treatment and prevention, the widespread accessibility of modern smartphones allows later reuse of the technology in completely different contexts.

In this essay, I use various moral theories to discuss the acceptability of the case. My conclusion is that I could possibly accept this new use of the technology given that certain circumstances are fulfilled, which are discussed throughout the essay. After introducing the fictitious case, I will define the main motivation behind the title of the essay; Internet of Things (IOT). I will then explain the connection of IOT to my proposed term and essay title; Internet of Heads (IOH). Then I will investigate to what extent and how consequentialist, deontological and virtue ethics could be used to either justify or ban various states of progression in the case. Two types of justification conforming to virtue ethics are then discussed: First, a hierarchical justification by relating to an extreme case of a current (social networking-) trend by going from an individualized notion of selfhood to a networked/relational notion of selfhood. Second, an extension of the first type by maintaining an appropriate balance of individuality-preserving relational selfhood by means of “hybrid selves”. Both are inspired by (Ess, Fossheim, 2013).

### **The Internet of Heads (IOH) app**

“It was clearly an eccentric atmosphere among the scientists and engineers that evening on the 22. of May 2023, when the results were clear regarding the FDA (Food and Drug Administration) application. Almost a decade of thorough testing had been finished resulting in a relatively portable, cheap and thus cost-effective device that was able to measure functional and physiological activity in the mammalian brain using a combination of optics and radio waves. A long-standing inspiration of the scientists for developing such a device was that this cost-effective combination of portability and cutting-edge non-invasive brain activity measurement

technology could essentially be a ground-breaker for prevention and treatment of neurologic diseases such as Alzheimer's disease.

Early prototypes had proved to great extents that the combination of measuring fluid dynamics of the brain through optics and the electrical activity through radio waves, combined with advanced distributed artificial intelligence algorithms, could give insightful diagnostic and/or prognostic markers. The examination would be lasting for just a couple of seconds where a laser-like beam was pointed at the brain region of interest. Based on decades of neurological disease and treatment pathway data, the markers could for any given human brain give various probabilities for developing a plethora of various neurological diseases, as well as give precise diagnostic measures of the diseased brain as well as propose possible actions of treatments. The technology was now FDA-approved, meaning that it would be easily implemented into standard treatment in hospitals all over the world.

What the decision makers in this development and deployment process did not consider to a full extent, was that this technology became easily applicable on regular non-medical hardware. It happened to be that a couple of years later, modern commodity smart phones had, for a couple of other reasons, built-in just the appropriate components to be able to perform this analysis of brain activity. Conforming to the good intention of the researchers and engineers that had developed the original product for medical use, the source code and other necessary details for making this possible on a smart phone had been openly shared on the Internet. The technology could then by various companies and individuals with different moral values and intentions, be enabled for the everyday smartphone user. Ideas such as being able to "check your stress level and your focus", "monitor your thoughts" or even "take a snapshot of your personality and consciousness" and then share the results with friends on the Internet circulated with multiple companies. To many people, this brain activity measurement technology appeared as nothing particularly revolutionary, as similar personal oriented analyses had been used through social media and other means for several years. For a lot of people, monitoring a friend's brain activity with your phone was just as non-provoking as getting targeted ads based on your Facebook likes and Google search history. It was mainly up to ethics experts to judge if this mainstream development of using technology in social interactions had gone too far."

### **Internet of Things (IOT)**

(Xia, Yang et. Al., 2012) refers to IOT as “the networked interconnection of everyday objects, which are often equipped with ubiquitous intelligence”. The word “ubiquitous” being a synonym of “everywhere” describes that the objects in the network, typically small embedded computers, are widely apparent in any context, whereby “intelligence” would be the result of complex interactions between the objects to achieve a given goal. If the use of IOT is highly dependent on context, we say the objects are context-sensitive or context-aware. Computations could be performed locally on the embedded computers, which is called “edge computing”, or performed more traditionally on larger machines connected to the network (back-end). Both ways of computation can relate to computational or artificial intelligence, which here essentially is any set of algorithms able to learn from data gathered from IOT devices. Besides including communication between the embedded computers, IOT also includes the communication between humans and computers, which is related to the term Human-Computer Interaction (HCI). Some examples of IOT is automation of heating and lighting in a home based on personal habits or automatic reporting of a car collision via GPS and cellular network in a modern car.

### **Internet of Heads (IOH)**

IOH is my own term, describing IOT and internet communities cooperating for analysing data that originates from human actions. The analysis is typically performed to structure and classify the data into valuable information for humans or computers, which could be an overview of a person’s habitual patterns. The analysis utilizes non-stop data flows coming from both conscious and nonconscious actions of the human (big data) as well as applied artificial intelligence (AI). Examples of IOH, could be personally targeted online advertising based on tracking and analysis of internet habits, Google search history, Facebook likes, etc. A more extreme example could be China’s Social Credit Scoring System, where every citizen has a social credit score that is based on fusing together multimodal data (preferably IOT-data) such as social media activity, voting records, financial information, online purchasing, credit history, tax payments, legal matter, etc. The goal has been to construct an overall social credit ranking of “trustworthiness” which can then be used to guide access to job opportunities, social activities, travel visas, educational opportunities and the ability to borrow money. The social credit system is proposed to be mandatory in China by 2020 (Murrell, 2018).

### **Immediate assessment of the issue**

Let us now have a closer look at the case with the IOH app. Which ethical implications of the technology must be taken into consideration to determine whether this technology use is problematic? My initial moral intuition is that it was morally wrong to let the technology be used in non-medical settings. Possible negative consequences for the users sharing data should outweigh the positive fact that the company is making profit from user data. That should be a natural precaution since we don't clearly know the extent of the negative consequences. Some questions are:

- What are the societal impacts?
- How can we preserve modern values of privacy and individual autonomy?
- Could the technology be exploited?
- What are the risks and consequences of misuse?

### **Consequentialism and deontology for discussing acceptability**

A consequentialist ethical view considers the consequences of the possible actions when evaluating the morality of the actions by weighing the good and bad consequences against each other. Shortly, "the ends justify the means" (Zevenbergen et. al, 2015). A requirement is hence that it is possible to know or in some way estimate the consequences of an action as well as know all possible actions to take. In a deontologist ethical view, in contrast, one evaluates the rightness or wrongness of the actions themselves regardless of their consequences (Zevenbergen et. al, 2015). In my fictitious case, one might argue that the company or the original researchers and engineers were better fit to predict consequences of their actions than the end user of the app. For instance, the end user does likely not have the technical knowledge necessary to fully understand consequences of the app use. Thus, the end user would not be able to use consequentialist reasoning to evaluate the morality of the app use. Specifically, it is important that the app was developed in such a way that the user can use it without being forced to take actions that are morally unacceptable. A common counterargument against consequentialism is that it is impossible to know or estimate all possible the consequences of all actions. This should be especially evident for the (front-end) user of the IOH app.

I think that scientists and engineers alone should not be expected to anticipate all the moral aspects from possible consequences of the technology but need help from ethics committees. Perhaps the FDA was just as responsible for the commercialization and possible future misuse of

the technology as the company releasing the IOH app? Had the original technology not gotten an approval, one might speculate that this would trigger more ethically questionable uses of the technology than the IOH app. Another argument for the ethical permissibility of the original development of the technology is that it could be difficult to provide good ethical frameworks for the technology if it was not investigated.

The company or individual commercializing the technology did likely have different intentions than the researchers and engineers developing the original product. Is it in this case ethically acceptable to commercialize a product originally intended for medical use, with all its possible consequences, for instance regarding privacy protection? However, having different intentions do not directly lead to morally unacceptable actions. The company as actor would probably weight consequentialism above deontology in many strategic decisions. In this setting I think that the morality of consequences of an action or investment is emphasized rather than the morality of the action itself, just as maximizing investment returns and not considering the morality of investments is a consequentialist view. A bad action leading to moral dissonance could be overlooked or otherwise rationalized through neutralization techniques in the business culture (Heath, J. (2008)). Even if the IOH app collects and analyses user data for third party company ad sales in ways that may be morally questionable, the company could justify their methods by for example, claiming that users will accept it since it is a revolutionary technology for social interaction improving peoples' social life. A possible ethically problematic consequence could be that the reuse of the technology leads to a patent, thus preventing the technology from being used in its original clinical setting. I would then say that the actions taken by the company to commercialize the technology into an IOH app is morally unacceptable.

It is a widespread idea nowadays that when you are not paying for a service you are using, such as Facebook, you are the product being sold. Your Facebook use might be free of charge for you, but the company is benefiting from the vast amount of income from ad sales, directed at you. This theory has deemed quite some controversy (Gilbert, 2018). Simply speaking, ad sales are more important than you for maintaining the service, which I would say is more consequentialist than deontology justification by the company. Would you consider that signing the "Terms of Service" of this app as a way of giving agreement of any of yourselves' or the company's

possible uses and conflicts following from the technology, as anything more than consequentialist justification?

Lastly, a note on social interaction. Networked human-computer interactions such as IOH technically involves important programmed (by humans) or learnt actions (by computers) that appear as unconscious actions to the users. Meanwhile many of these actions only have purpose because of the humans in the network. We are used to thinking of a social interaction as a *relationship* between two or more individuals (Wikipedia, Social relation. (retrieved December 2018)). (Wikipedia, Interaction. (retrieved December 2018) defines an interaction as a kind of action that occurs as two or more objects have an effect upon one another. Hence, a social interaction does require neither a purposeful nor a conscious action of the individuals taking part, only that the individuals' actions influence each other. My intuition is rather that an interaction is not social if it is caused by unconscious actions or actions with no purpose, however new technologies challenge this intuition. Several interesting questions appears: For whom or which objects in the IOH app has an action most purpose? Moreover, for any given action performed, which entities (objects, humans, etc.) in the network experienced it as a conscious action, and which as a non-conscious action? For instance, is it the company or you that is most conscious when uploading your brain activity? For whom is there the most purpose in this action? Does consequential reasoning consider consequences of non-conscious actions? Does deontological reasoning include purposeless actions?

### **Internet virtue ethics and relational selfhood**

Having your brain activity shared in your social networked community with the possibility of it being used by profit-making companies is an extreme possible consequence of accepting "Terms of Service". However, I think accepting to use the app can also be related to less extreme cases of accepting networked technologies. The main point is that the morality of a user might be explained by a modern concept of shifting individuality/selfhood. (Ess, Fossheim, 2013) uses Medium Theory to relate *literacy-print* to the traditional democratic notion of a rational and autonomous individual self. Another term, *secondary orality*, is related to more *relational* concepts of selfhood. The shift from traditional printed media such as newspapers to electronic media such as Internet communities as a means of communication can lead to shifts from individual notions of selfhood to more relational notions of selfhood. The (eastern)

Confucianism and (western) Communitarianism are mentioned as historical examples of ideas promoting relational selfhood, that would perhaps be better suited for *secondary* orality and thus Internet morality opposed to the *literacy-print* media conforming to modern western democratic principles.

(Ess, Fossheim, 2013) legitimize the definition of privacy in Nissenbaum's Theory of Privacy as Contextual Integrity to the relational self as a way of how the relational self looks on the *actors* involved, when discussing ethics. In Nissenbaum's Theory, privacy is defined "as a right to an "appropriate" flow of information as defined by a specific context" (Nissenbaum, 2009, p 107). An example of a specific context is the marketplace. My point is that this way of weighting the *relationality* of the various *actors* involved when discussing ethical concerns of privacy is relatable to emphasize the character of the actor as in virtue ethics and that it is a possible way to accept using the IOH app.

(Zevenbergen et. al, 2015) state that "Whereas consequentialism and deontology examine the quality of an action, virtue ethics is concerned with the *character* of the actor – it prescribes "how we should be rather than what we should do" (Darwall, 2003)". The traditional Aristotelian virtue ethics amounts to acknowledging virtues such as "justice" and "temperance" by finding good means of life. However, virtue ethics does not stand in opposition to consequentialism and deontology. It could involve elements from both consequentialism and deontology. Perhaps one can say that China's social credit score to assess "trustworthiness" is a Confucianism realization of applying virtue ethics following the relational notion of selfhood?

Analogous to how traditional networked systems are engineered; this application of virtue ethics incorporates a highly hierarchical network of interconnected objects and humans (thereby IOH) having fixed roles whose moral justifications are mainly based on their *character* in relation to each other and not individual actions. Such a relational view on society could justify the use of close social interaction technologies such as the brain activity reading and sharing app. For instance, if the user base has built up a certain "thrust" for the actors, it would be more morally acceptable for the regular user to use the app.

### **Hybrid selves and holistic pragmatism**

Interestingly, (Ess, Fossheim, 2013) exemplify Norway as a country that has succeeded in maintaining individual notions of selfhood (as in *literacy-print* media) with the rapid increase of *secondary orality* in electronic media which strongly motivates relational notions of selfhood (*secondary-orality*). One of the ground pillars of this success has been the conforming to the Norwegian definition of “private life” (“privatlivet”) as opposed to strict data privacy and rights definitions. In addition to including the individual, the “private life” is also constituted of one’s close friends, family and other close relationships. Thus “private life” is a concept that maintains both an individual and relational notion of selfhood, which Ess and Fossheim denote the “hybrid self”. For instance, in the setting of the app, we (Norwegians) would strongly value privacy (“personvern”) above data protection. Data protection would be a natural result of privacy, but also the various relations involved in the data flow would be important in the ethical discussion. This fits well with previously mentioned Nissenbaum’s Theory of Privacy. Such a more holistic view could possibly justify the use of the IOH app, given that ethical frameworks and policies ensuring that the privacy of the individual (and thus a sense of maintaining traditional identity values) in strong relations to others in the network, are followed. We should perhaps ask ourselves if the fairness of this technology can be justified from a more pluralistic and holistic perspective, rather than applying single-framed ethical theories in company and user-centric discussions. What do we think the human nature wants to achieve with social interactions? Can we reach an idealistic state of social interaction?

## **Conclusion**

Consequentialism, deontology and virtue ethics was used to discuss acceptability of the IOH. The morality of the original creators of the technology, the company creating the IOH app as well as the potential user of the IOH app were analysed. A modern notion of relational selfhood was then connected to virtue ethics as an attempt to explain a possible user justification. The example was then extended with the concept of relational-identity “hybrid selves” of the user.

With the generic definition of social interaction, it is hard to justify the technology in terms of action-driven consequentialist and deontologist ethics without ending up benefiting to the (economically) good or bad intentions of specific actors in the network.

Virtue ethics might be better fit for the moral basis in accepting the IOH app from an user perspective, however this could result in loss of modern western values of individual identity



being applied to the users. However, given the existence and appliance to western identity-preserving policies (such as maintaining the Norwegian definition of “personvern”), it can be morally justified without lack of individualism. This is explained by recent progression of Internet research where notions of the “hybrid self” as “relationalist”-individuals are introduced.

To summarize, I would probably accept this technology if the moral justifications were valid from a holistic perspective. By holistic I mean that the technology could benefit from a possible progression of society, and not from the increased profit for companies. Even if the overall outcome of a company profiting from such a technology could benefit society, I think the moral justifications of a company deciding to re-use it into an IOH app might not be valid. If this is the case, we would be less able to ensure the moral safety of citizens when being introduced to new technologies. However, if the company also shows interest in consequentialist, deontology and virtue ethical discussions outside of their own business culture as well as follows existing laws to an extent for basis of their moral discussions and values, I would be able to accept it.

## References

- Ess, C., Fossheim, H. (2013). Personal Data: Changing Selves, Changing Privacies (Digital Enlightenment Yearbook 2013). IOS Press, 2013. Retrieved from <https://www.uio.no/studier/emner/matnat/ifi/MNSES9100/h17/literature/ethics-and-information-technology-/ess-fossheim-personal-data-changing-selves-changing-privacies---digital-enlightenment-handbook.pdf>
- Xia, F., Yang, L. T., Wang, L., & Vinel, A. (2012). Internet of Things. International Journal of Communication Systems, 25(9), 1101–1102. <https://doi.org/10.1002/dac.2417>
- Murrell, A. (n.d.). Pushing The Ethical Boundaries Of Big Data: A Look At China’s Social Credit Scoring System. Retrieved December 5, 2018, from <https://www.forbes.com/sites/audreymurrell/2018/07/31/pushing-the-ethical-boundaries-of-big-data-a-look-at-chinas-social-credit-scoring-system/>

Gilbert, B. (n.d.). Facebook just published a message for its users: No, you're not the product. Retrieved December 5, 2018, from <https://www.businessinsider.com/facebook-advertising-users-as-products-2018-4>

Heath, J. (2008). Business Ethics and Moral Motivation: A Criminological Perspective. *Journal of Business Ethics*, 83(4), 595–614. <https://doi.org/10.1007/s10551-007-9641-8>

Nissenbaum, H. (2009). *Privacy in Context: Technology, Policy, and the Integrity of Social Life*. Stanford University Press.

Darwall, S. L. (2002). *Virtue Ethics*. Wiley-Blackwell.

Zevenbergen, B., Mittelstadt, B., Véliz, C., Detweiler, C., Cath, C., Savulescu, J., & Whittaker, M. (2015). *Philosophy Meets Internet Engineering: Ethics in Networked Systems Research*. (GTC Workshop Outcomes Paper) (SSRN Scholarly Paper No. ID 2666934). Rochester, NY: Social Science Research Network. Retrieved from <https://papers.ssrn.com/abstract=2666934>

Føllesdal, D. (2005). The emergence of justification in ethics. *European Review*, 13(2), 169–182. <https://doi.org/10.1017/S106279870500030X>

Social relation. (2018). In Wikipedia. Retrieved from [https://en.wikipedia.org/w/index.php?title=Social\\_relation&oldid=870728069](https://en.wikipedia.org/w/index.php?title=Social_relation&oldid=870728069)

Interaction. (2018). In Wikipedia. Retrieved from <https://en.wikipedia.org/w/index.php?title=Interaction&oldid=866995986>