



AI in Healthcare: Ethical and Privacy Challenges

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Abstract. The deployment of Artificial Intelligence in healthcare is extremely promising and although AI is no panacea, harnessing patient data will lead to precision medicine, help detect disease before they manifest and support independent living for the elderly, amongst many other things. However, this progress will not be without challenges from both an ethical and privacy standpoint. These issues need understanding from policy makers and developers alike for AI to be embraced responsibly.

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1 AI in Healthcare

Healthcare represents one of the most interesting and promising areas for the deployment of AI systems [1]. We can now detect cancer faster and earlier than before, identify diseases before they manifest and spot genetic disorders which may affect us later down the line.

Likewise, algorithms can streamline back office processing thus improving patient hospital experience as well as saving considerable resources by reducing waste and inefficiency – resources that can then be invested into better patient care.

However, healthcare is a sector where technology must meet the law, regulations, and privacy principles to ensure innovation is for the common good. This is because the deployment of AI in the medical field brings a plethora of challenges from a privacy and ethics standpoint, namely: the safeguarding of patient data, the ethical boundaries of innovation and the actual impact of technology on medics and patients alike.

2 Privacy Challenges

Privacy is a complex concept: it is culturally bound, and it evolves with time. It is culturally bound as it is influenced by the cultural norms of the specific country it inhabits, thus varying across territories, generations and backgrounds. Therefore, it is conceivable that it will also evolve alongside technological development, too. To an extent, we are already seeing the transition of our ‘personhood’ into data citizenship as we become increasingly monitored with data collection points placed at every corner of our daily life; through our smartphones as well as the tracking of our movements online.

Within this transformation, we are becoming acquainted with the fact that our data is of great value – as well as becoming a real currency that we can use to access entertainment and sometime services at no cost. Alongside this, we are also witnessing a public awakening regarding the malicious use of data for microtargeting, online manipulation and behavioral advertising that is leading to a decrease in public trust towards the way private and public organizations handle our data. This distrust ranges from fear of CCTV cameras and state monitoring to the devastating effects of online manipulation which last year culminated in the Cambridge Analytica scandal.

It is therefore of no surprise that citizens are becoming wearier of collection points, unethical use of data and transparency fallacies, namely the privacy notices that – due to their nature as long and often unintelligible documents – are often brushed off.

Understanding the wider attitude and changes towards privacy is key when it comes to healthcare, as trust becomes paramount. Health data is the most private information about one’s self whilst being the most valuable resource to improving wellbeing, defeating diseases and supporting the elderly, those with disabilities and in social care.

3 Building Trust in Algorithms Deployment in Healthcare

Challenges around privacy emerging from the use of AI in healthcare must not be underestimated, and it is essential to recognise that the distinction between personal data and sensitive information is increasingly blurred [2] as we can now infer health information from behavior patterns and other data which is not sensitive in the first place.

The deployment of algorithms requires a clear roadmap, and that includes:

- *Data Privacy Impact Assessments* to assess the risks of privacy harms, identify the privacy enhancing technologies that need to be deployed to safeguard patient data.
- *Algorithmic Impact Assessments* to ensure algorithms do not have bias embedded into them. As algorithms use historic data, a level of bias may be inherent, or it can emerge via proxy, class labels or associations. It is crucial to ensure all tools are in place to identify risks of bias harms as well as to debias algorithms at the onset as well as later down the line.
- *Audit trails* must be accurately kept to ensure logs are kept of who is doing what, which data are used and what changes are being made to the systems.
- Procurement law in healthcare setting must ensure purchase of AI systems from third parties needs to adhere to strict procedures including assessments of how the algorithms have been trained, whether they have been audited and whether they have been assigned a trustmark recognizing due process in their algorithms processing.
- The establishment of a clear governance framework overseeing the use of AI, including the set up of the three lines of defense to mitigate risks.

4 Wider Ethical Issues Surrounding the Deployment of AI in Healthcare

There is no doubt that the interplay between data, data analytics, robotics and AI is extremely complex, nor that it will challenge the current regulatory establishment.

The key underlying issue is that ‘big data’ challenges the core principle of privacy – which is to collect as little data as possible. Yet big data is about collecting all available information. This dichotomy is hard to reconcile and stands as the core challenge to privacy as we have known it so far. The use of mobile medical apps, wearables, chatbots, connected devices etc., shows the amount of data that can be collected. For this data to be harnessed, clear codes of privacy and ethics need to be established and adhered to. Equally, it is perhaps necessary for these codes to be enforced, and for regulators to conduct audits into the algorithms to ensure they follow due process.

But AI is much more than technology and the deployment of AI in healthcare is likely to be challenging in other areas.

One challenge, for example, will be the impact on the workforce and how medics will be trained and learn how to cooperate and work alongside the machine. How will the machine augment a doctor’s capabilities? How will they develop the confidence in it and, similarly, the detachment should they feel the need to intervene? And, equally, what will happen to medical knowledge should decisions and diagnostics be increasingly made by machines? These are all incredibly important questions we cannot ignore if we want to exploit the opportunities offered by artificial intelligence.

Lastly, one key challenge will be accountability, and namely who is responsible in case a mistake is made [3]. Interestingly, patients are used to relating to doctors, and understand an error can be made by virtue of their humanity. How will patients react to errors made by machines? This consideration is in addition to the legal issues around accountability, namely who will hold the responsibility for a mistake. Courts will have to intervene, and the law will need to catch up to identify what is the best normative answer to this problem.

5 Conclusion

The deployment of AI in health is promising and very welcome. Cooperation between doctors and machines could represent a turning point with regards to our ability to tackle diseases and improve our wellbeing.

From precision and targeted medicine to back office operations and leaner processes, from support with independent living for the elderly to greater diagnostic ability, the benefits will certainly be invaluable.

However, it is likely that AI in health will also challenge the boundaries of both current regulatory systems and privacy principles [4]. It is therefore essential to adopt a cautious approach in order to maximise the positive whilst reducing the risks of privacy, bias and ethics harms.

References

1. Bartoletti, I.: Algorithms may outperform doctors, but they're no healthcare panacea. The Guardian. <https://www.theguardian.com/commentisfree/2018/jul/26/tech-healthcare-ethics-artificial-intelligence-doctors-patients>. Accessed 26 Mar 2019
2. Marks, M.: Artificial intelligence based suicide prevention. Yale J. Health Policy Ethics. <https://ssrn.com/abstract=3324874>. Accessed 26 Mar 2019
3. Calo, R.: Robots and privacy. In: Lin, P., Beckey, G., Abney, K. (eds.) Robot Ethics: The Ethical and Social Implications of Robotics, pp. 187–202. MIT Press, Cambridge (2012)
4. Terry, N.: Of regulating healthcare AI and robots. <https://ssrn.com/abstract=3321379>. Accessed 26 Mar 2019