



BLOCKNUBIE

Are healthcare professionals in the AI crosshairs?

Introduction

Digital Transformation represents an enormous opportunity, but it also a threat. Entities that can adapt to new and changing ways of working can ride the wave and thrive. Those unwilling, or unable to adjust will be left behind. Such disruptive forces are not new - think Kodak, Blockbuster. More recently, digital transformation has revolutionised several industries. Long-established financial institutions are struggling to regain territory lost to ambitious fintech companies who attracted customers away from traditional institutions with easier access to innovative, digital services. Traditional travel agencies have all but disappeared as passengers research and purchase their own flights & accommodation.



In healthcare, consumers have become familiar with apps and monitoring devices. Robot-assisted surgery, and drug discovery are areas that have been significantly enhanced by technology in recent years. The EU has identified the need for better access to healthcare and a greater focus on patient-centred services which places renewed focus on front-line services. As our populations get larger and older more pressure is coming down on already stretched health services. Areas such as diagnosis, virtual assistants and fraud detection are ready for renovation. Administrative tasks, patient privacy and cyber security will be transformed by blockchain, a storage technology that focuses on privacy, trustworthy data, and frictionless transactions.

Augmented Health Services

For consumers of health services, disruption may not be ideal. Our collective interests are better served by integrating with and strengthening existing systems with the absolute best of what new digital intelligence can bring. We value healthcare professionals and their services by supporting and augmenting them. Technology should be trained and tailored to aid our doctors and nurses.

Employing machines to perform repetitive tasks frees healthcare professionals to focus on what they have trained to do – listen to patients, build rapport, exercise judgement and tailor individual treatments.

- Machines are good at fast, accurate decisions when similar preceding cases are examined
- Humans are good at handling new, unseen situations that require judgement

If married correctly and embraced by industry, the alliance of human and machine intelligence will deliver greater than the sum of their parts for the patient.

Application of New Technology

Health-tech must bridge the gap between the complexities of advanced technology and the human side of healthcare. As technologists, it is our job to provide health professionals with transformative solutions without getting in the way. The best technology adds value without realising its presence.

When using technology, perception is reality - no matter how fantastic the underlying tech, the perceived value in the eyes of healthcare worker will be how easy it is to use while performing daily tasks. Just as healthcare professionals work tirelessly to improve patient outcomes, healthtech experts must work determinedly to harness evermore complex technology and yet, make that power effortlessly available to doctors and nurses.

Trust

Digital transformation presents significant opportunities, but change is difficult. As humans, we are naturally predisposed to the status quo. If new technology is to be accepted, it must earn trust. Where algorithms offer advice, that fact must be clearly indicated along with confidence levels. Humans remain responsible for actions and outcomes, so they must understand how and why decisions are arrived at. Only armed with this detail can healthcare professionals choose to use or override AI recommendations.

This transformation is a journey and like the three musketeers, healthcare professionals, healthtech and patients must navigate it together – all for one and one for all!

Artificial Intelligence

Artificial intelligence is achieving results in many aspects of healthcare delivery and research.

- **Imaging:** Machines read x-rays in a fraction of the time it takes humans. Furthermore, they are beginning to do so more accurately, as Stanford ML Group's CheXpert competition demonstrated recently. Radiologists everywhere should be empowered with assistive technology.
- **Diagnostics:** Clinicians can be supported by AI that reads MRI data and can aid in earlier detection of conditions such as cancer.
- **Outcomes:** In the case of Alzheimer's Disease, researchers are using deep learning to target one's propensity to acquire the disease, but also to identify the degree to which patients may experience symptoms, which in turn informs where treatment is most effective.

Blockchain

Blockchain is a revolutionary data storage mechanism where pieces of data are stored at multiple locations in a way that prevents modification or tampering. It is a general-purpose technology facilitating better, faster, cheaper productivity, but it is so much more than that. Like a database, the user is unaware of its presence, but it has inherent properties that will revolutionise healthcare and many industries.

- Sophisticated encryption ensures data is only usable by those who should have access.
- Data stored on a blockchain is trustworthy as it can only be entered by authorised entities such as medical professionals and it cannot subsequently be modified or tampered with.
- It is a great solution for securing sensitive patient data in a way that maintains ownership and control with the patient. An exciting aspect is how it facilitates sharing in a permissioned way. A patient may decide, for example, to share full details of a health condition with an insurance provider yet only share partial details with an employer.
- Information on the blockchain is verifiable as its entry can be traced back to the authorised trusted source.
- Blockchain provides for trusted sharing of health records between hospitals and other service providers. It will seem unthinkable in years to come how different hospitals/clinics maintained their own independent patient health records.

Ethical Considerations

These ground-breaking technologies that will radically improve healthcare provision and access do not come without a price. There are significant ethical concerns as we rely more and more on machines to make decisions about our personal lives. Considerations such as accountability for AI driven decisions, repeatability – would the same decision be made every time by an algorithm? If a human retains oversight and accountability, how can they keep up with a machine's ability to process and make thousands of rapid decisions? As AI offers opportunities to perform tasks faster and more accurately than the incumbent humans, how does that impact on people currently earning livings from performing those tasks today? What about bias – how do we ensure we are not perpetuating bias if using datasets with inherent bias? These topics are the subject of another blog post.

Let us know what you think

Partnerships are efficient as industry and academia advance the field. Blocknubie, for instance, is working with several universities and like-minded companies and provides an AI development platform to accelerate AI and blockchain adoption by solution providers.

We'd love to hear your thoughts at info@blocknubie.io