Plextek

The Future Impact of
ARTIFICIAL INTELLIGENCE
on Medical Practice

Artificial Intelligence (AI) and machine learning technologies are beginning to have dramatic impacts on the healthcare industry.

Developments in the field are already being felt in sectors where current practices are slow, complex or require highly-trained specialists. Current impact is likely to be dwarfed however by the future promise of increased accuracy in clinical diagnosis, prognosis and treatment.

Medical Imaging

The most significant current area of activity is machine learning for medical imaging studies. The challenge for clinicians is to interpret the complexity and dynamic changes of clinical images, which can be time-consuming, expensive, and prone to errors due to visual fatigue.

More than half of the world's population has no access to medical imaging capabilities, with a concomitant effect on disease diagnosis. Recent advances in deep learning show that computers can extract more information from images, with an increase in reliability and accuracy. Moreover, deep learning can be used to identify and extract novel features that would otherwise not be easily detectable by human viewers.

Cancer diagnosis

Traditional methods for detecting cancers, including CT scans, MRI and X-rays, are often insufficiently reliable to be effective in providing accurate diagnoses and saving lives. Usage of AI in analysis is proving effective in improving the capabilities of such procedures. For example deep learning analyses can be used to detect lung cancer nodules in CT images, and the results suggest that this can be much more effective than a team of expert radiologists, saving valuable resource within a healthcare setting.

Detection of intracranial bleeding

Another impressive use of deep learning technology is the detection of intracranial bleeding through the use of clinical insights, deep learning, patient data, and machine vision by systems such as IBM's Watson, to automatically flag potential cerebral bleeds for physician review.

Detecting Alzheimer's disease

AI-enabled systems can now detect and diagnose Alzheimer's disease in less than a minute based on speech patterns and voice with over 80% accuracy. AI systems are capable of noting idiosyncrasies such as the length of pauses between words, preference for pronouns over proper nouns, overly simplistic descriptions, and variations in speech frequency and amplitude. These parameters would be impossible for a human listener to track in real time, whereas AI systems are objective and quantifiable in their analysis.

About Nigel Whittle

Nigel's focus at Plextek is on helping organisations in the Medical & Healthcare sectors with their strategic positioning and technological capability. Nigel has a long and successful track record delivering healthcare, life sciences & pharma projects into the marketplace.

Plextek is an engineering consultancy at the heart of technology innovation. With a 30 year history of providing complex engineering solutions to Global organisations, we continuously innovate to push the boundaries of engineering today.

If you'd like to chat to Nigel about your project, please call 01799 533200 or nigel.whittle@plextek.com

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