

Advantages of Machine Learning in Health Care

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DESCRIPTION

It is safe to mention there are too many manual processes in medicine. While in training, I hand wrote lab values, diagnoses, and other chart notes on paper. I always knew this was a neighbourhood during which technology could help improve my workflow and hoped it might also improve patient care. Since then, advancements in electronically medical records are remarkable, but the knowledge they supply isn't far better than the old paper charts they replaced. If technology is to enhance care within the future, then the electronic information provided to doctors must be enhanced by the facility of analytics and machine learning.

Using these sorts of advanced analytics, we will provide better information to doctors at the purpose of patient care. Having quick access to the vital sign and other vital signs once I see my patient is routine and expected. Imagine what proportion more useful it might be if it used to be also shown my patient's risk for stroke, arteria coronaria disease, and renal failure supported the last 50 blood pressure readings, lab test results, race, gender, case history, socioeconomic status, and latest clinical test data.

Machine learning in medicine has recently made headlines. Google has developed a machine learning algorithm to assist identify cancerous tumors on mammograms. Stanford is employing a deep learning algorithm to spot carcinoma. A recent JAMA article reported the results of a deep machine-learning algorithm that was ready to diagnose diabetic retinopathy in retinal images. It is clear that machine learning puts another arrow within the quiver of clinical deciding.

Still, machine learning lends itself to some processes better than others. Algorithms can provide immediate benefit to disciplines with processes that are reproducible or standardized. Also, those with large image datasets, like radiology, cardiology, and pathology, are strong candidates. Machine learning are often trained to seem at images, identify abnormalities, and point to areas that require attention, thus improving the accuracy of these processes. Long term, machine learning will benefit the family practitioner or internist at the bedside. Machine learning offers an objective opinion to enhance efficiency, reliability, and accuracy.

THE ETHICS OF USING ALGORITHMS IN HEALTHCARE

It's been said before that the best machine learning tool in healthcare is the doctor's brain. Could there be a tendency for physicians to view machine learning as an unwanted second opinion? At one point, autoworkers feared that robotics would eliminate their jobs. Similarly, there could also be physicians who fear that machine learning is that the beginning of a process that would render them obsolete. But it's the art of drugs which will never get replaced. Patients will always need the human touch, and therefore the caring and compassionate relationship with the people that deliver care. Neither machine learning, nor the other future technologies in medicine, will eliminate this, but will become tools that clinicians use to enhance ongoing care.

The focus should get on the way to use machine learning to reinforce patient care. For example, if I'm testing a patient for cancer, then i would like the highest-quality biopsy results I can possibly get. A machine learning algorithm which will review the pathology slides and assist the pathologist with a diagnosis is effective. If I can get the leads to a fraction of the time with a uniform degree of accuracy, then, ultimately, this is often getting to improve patient care and satisfaction.

Healthcare must move from thinking of machine learning as a futuristic concept to seeing it as a real-world tool which will be deployed today. If machine learning is to possess a task in healthcare, then we must take an incremental approach. We must find specific use cases during which machine learning capabilities provides value from a selected technological application (e.g., Google and Stanford). This will be a step-by-step pathway to incorporating more analytics, machine learning, and predictive algorithms into everyday clinical practice.

DATA DRIVES MACHINE LEARNING

As more data is out there, we've better information to supply patients. Predictive algorithms and machine learning can give us a far better predictive model of mortality that doctors can use to teach patients.

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But machine learning needs a particular amount of knowledge to get an efficient algorithm. Much of machine learning will initially come from organizations with big datasets. Health Catalyst is developing Collective Analytics for Excellence (CAFÉ™), an application built on a national de-identified repository of healthcare data from enterprise data warehouses (EDWs) and third-party data sources. It is enabling comparative effectiveness, research, and producing unique, powerful machine

learning algorithms. CAFÉ provides collaboration among our healthcare system partners, big and little.

Another possibility for smaller entities is going to be their ability to merge their data with larger systems. At some point, we may see regional data hubs with datasets customized for geographical, environmental, and socioeconomic factors that give healthcare systems of all sizes access to more data.