Optimizing Healthcare Delivery

Machine Learning for Healthcare Providers

As a healthcare provider, your mission is clear: deliver the highest quality of care possible while balancing the requirement to run sustainably. Margins are razor thin and providers that fail on these basic drivers of success either go out of business or get acquired by competitors.

For years, leading providers have sought to capture and use all of the patient and medical data available to them to achieve high-quality, efficient patient care. In many cases, electronic health records (EHR) – a major source of these data – have failed to deliver the value expected.

This is part of the reason that the Centers for Medicare and Medicaid Services (CMS) have transitioned from a requirement of "meaningful use" for EHRs (the standard during the period of EHR adoption) to one of interoperability (the standard today, now that most providers are already up and running with EHR).

Yet leading providers understand that interoperability is a means to an end. The ultimate goal is to put data visibility and insight to use for better patient care. This is where SpringML can help.

We start by first understanding your processes and organizational challenges. Then we consolidate your view of data across all relevant facets of healthcare operations on secure, trusted cloud platforms. With interoperability achieved, we then go a step further to help you execute on your healthcare mission with the use of artificial intelligence – applying powerful machine learning (ML) algorithms that use your data (structured and unstructured) to drive insights that can help you improve efficiency, drive down costs, and improve the lives of patients.

Quality and Efficiency for Sustainable Operations

Increasingly, healthcare providers are seeing the potential of ML to help strike the balance between quality patient care and sustainable operations. Across a wide range of scenarios – only some of which can be addressed here – many providers see artificial intelligence as a new way to solve persistent problems.

Here are some examples:

Prior authorization

Every healthcare organization in the United States works with insurance companies. One persistent irritant is the time and energy required to coordinate with insurance to green-light procedures and prescriptions. SpringML can help you automate this process with algorithms that understand patient plans, gather information across sources, and make authorization decisions based on an analysis of the appropriateness of the proposed action. This can speed delivery and save administrative resources that can be better applied to patient care.

Prioritization of care

In a busy hospital, especially in emergency rooms, physicians have only minutes to read medical scans and determine a course of action. This is hard enough, but when demand is high and resources are stretched, doctors also need to triage. SpringML can help you use artificial intelligence to evaluate the urgency associated with each scan and automatically prioritize worklists accordingly – helping you to increase operational efficiency on the ground.

Reduced patient readmissions

Though healthcare providers are often penalized for unscheduled patient readmissions, the variables at play that determine readmission often point to an expansive definition of "quality of care" that lies beyond the clinical setting. SpringML can help you reduce readmissions with models that base patient release decisions on a wide array of factors that include social determinants such as the availability of at-home help or access to transportation.

Fewer Medical Errors with Better Diagnostics

Most physicians and nurses in clinical settings today are simply overwhelmed by the sheer workload they are required to manage. This reality can lead to mistakes such as misdiagnoses, medication errors, lapses in the continuity of care, and much more. Not only does this put patient safety at risk, it can also lead to hospitals being penalized by CMS and other regulatory bodies regarding quality of care delivered.

Leading providers are using ML to optimize insight into patient conditions. Here are some examples:

Radiological image analysis

It is estimated that physicians make the wrong diagnoses at a rate of 10-15% of the time[1]. According to the Mayo Clinic, only 12 percent of second opinions confirm the original diagnosis[2]. SpringML can help you design ML algorithms that are trained on large volumes of radiological images and the associated disease to diagnose patients with greater accuracy.

Diagnostic chatbots

ML-assisted natural language processing (NLP) is now at a level of sophistication that interactive chat bots can now serve as valuable diagnostic assistants. SpringML can help you build voiceactivated chatbots that allow physicians to interface with stores of medical data and receive back diagnoses. This information can augment physician expertise and intuition to help more accurately pinpoint the disease or condition with which patients present.

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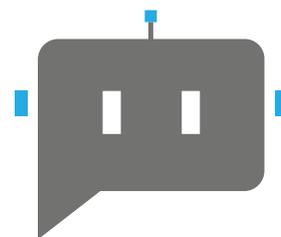
Resource Optimization Across the Clinical Setting

All healthcare providers seek to optimize their available resources – keeping beds filled, supplies on hand, and physicians focused on high-value activities. One these fronts and more, ML can help. Examples include:

Capacity planning

From skilled nursing facilities to rehab units and much more, keeping beds occupied with a steady flow of patients is a priority. Yet, because traditional planning approaches lack the foresight needed to see what's coming, most facilities struggle to execute. SpringML can put ML models to work for you that consider the current patient census in the context of recent discharges, OR schedules, and other historical data to accurately predict unoccupied beds. This can give admissions teams the time to take action immediately.

Supply chain planning

Stockouts of medicines and other supplies can eat up resources as staff scramble to meet demand by acquiring needed supplies through other means. SpringML can help you avoid such scenarios with proven approaches that apply ML to supply chain monitoring and analysis. Now it is possible to accurately predict stockouts well in advance of the event – allowing you to take preventative action ahead of time.
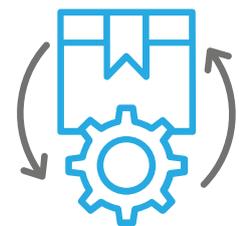
Human resource optimization

Physicians and nurses remain the most valuable resources you have as a healthcare provider. SpringML can help you automate scheduling for these resources based on actual demand and predict potential staffing issues ahead of time based on historical data and current circumstances. We can also help you to optimize staff productivity with ML-aided tools – such as using NLP to record a patient's visit, transcribe the conversation, and insert the text into the physicians notes for inclusion in the EHR.

Smart document processing

While the provider setting can be a place for the most advanced technologies, older technologies persist in tandem. One example is the fax – which remains pervasive as payers, labs, consulting physicians, and other partners continue to depend on it. SpringML can help you capture data from faxes and automatically insert the data into email and medical records. Using machine learning, we can detect the difference between dates, ID numbers, and other datafields – helping you to digitalize data for greater visibility, efficiency, and insight.
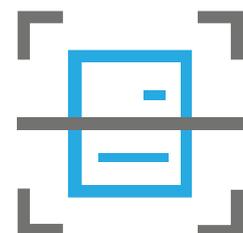
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Get the Most Out of Machine Learning with SpringML

From data to knowledge to wisdom. From reactive to predictive to prescriptive. If you're on the road to machine learning and insight from data, SpringML is there with the talent, know-how, and offerings to help you reach your destination.

No company is better prepared to help you seize the advantage with ML in healthcare and life sciences than SpringML. When you partner with us, you get the experience and expertise of a global systems integrator – one with a proven record of helping Fortune 500 companies realize ML value. Our solutions are implemented at more than 150 customer sites worldwide.

Learn More

To get started or learn how you can get more value from data with ML technology, visit us at:

🌐 www.springml.com/healthcare   📞 1.800.346.8260

References

[1] https://qualitysafety.bmj.com/content/22/Suppl_2/ii21

[2] https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-researchers-demonstrate-value-ofsecond-opinions/