On the way to disaster   *p.46*

AINA

AI and Analytics

Volume 2 • Edition 2020-21

COVER STORY

ART IS
MATH

Annual Analytics Magazine from the Students of PGDBA

Post Graduate Diploma in Business Analytics : Jointly offered by IIM Calcutta, ISI Kolkata & IIT Kharagpur

A New Hope

The emerging world of digital healthcare and analytics

Aditya Gadepalli

Anudeep Immidisetty

The next big thing in AI has always been a matter of discussion in several corporate and research communities. With AI spreading its wings into nearly every domain that we come across, this question has gained much more prominence than ever. While Artificial General Intelligence (AGI) might seem too far, recent happenings have shifted the focus towards something more indispensable. The COVID-19 pandemic might be here to stay, yet the disruption it has caused has been bringing several developments of the past decade into the spotlight.

Let's understand the scenario first. This pandemic has exposed serious shortcomings in our supply chains, consumer markets, the manufacturing sector among many, nevertheless, sectors like healthcare have already started showing us light at the end of the tunnel.

The Healthcare system, as it is now undoubtedly understood, plays a major role in the overall well-being of a society or a country. According to the definition of WHO, the healthcare system comprises all organizations, institutions, and resources that produce actions whose primary purpose is to improve health. The major categories of businesses in healthcare include medical service providers (hospitals), pharmaceuticals, insurance providers, and medical equipment manufacturers. This ecosystem comprises one of the largest markets in the world, with the global healthcare market valued at nearly $8.5 trillion in 2018 and is expected to grow much faster at a CAGR of 8.9% to nearly $11.9 trillion by 2022.

In the Indian context alone, this market was valued at $140 billion in 2017 and is projected to reach $372 billion by 2022. Currently, this market is largely skewed towards the western hemisphere with North America alone accounting for 41.9% of the global market in 2018. However, going forward, the fastest growing regions will be the Asia Pacific and Africa, where growth will be at CAGRs of 13.4% and 13.1% respectively.

Large and encompassing industries like these are often burdened with challenges. For example, aging populations, emerging diseases and more recently the COVID-19 pandemic have given rise to advanced focus areas of research and development. These efforts would need additional Infrastructure and R&D spend, often with little to no guarantee of profitable outcomes.

Let's consider CureVac's mRNA research for developing their vaccine shot. A simple preliminary analysis of their under-development mRNA-shot discovered its inefficacy in comparison to its parallels, leading to a whopping 52% plunge in share prices, wiping around $9.6 billion in market value. Such high levels of risk and uncertainty are discouraging for the other players in the ecosystem. We saw how until the peak of the first wave of COVID-19, neither logistics partners nor governments have actively invested in building cold-storage supply chain networks. Was it a failure to forecast medical demand patterns or was it entirely the failure of pharmaceutical firms to prove the profitability of such ventures to these players remains a mystery.

There is a definite need to optimize costs and provide confidence to businesses to garner investment and growth of this much needed sector and AI has been constantly proving its worth in this regard. Be it supporting clinical research, capacity planning of supply chains, demand forecasting for pharmaceuticals or claims validation for healthcare insurance providers, AI has been strengthening the ecosystem from multiple fronts. The most popular upgrades can be witnessed in the areas of automated diagnosis. Google's diabetic retinopathy analysis, MIT's research on melanoma identification, automated MRI/ CT scan analysis, and also the Kaggle community's contribution towards these developments prove how healthcare has caught the attention of the AI fraternity. Drug discovery, imaging and diagnostics, genomics, remote monitoring, mental health research and even fitness studies are being assisted or even disrupted in a big way. The advent of wearable tech like the Apple Watch reinforces why AI can be lifesaving. All these forces combined are currently driving progress and demand simultaneously across the sector.

The entire digital revolution is also changing the industry dynamics. Numerous startups are venturing into the digitization of health records, offering tele-consultation and extending e-commerce services. There are entire firms catering to healthcare analytics and related products. Developers have also come forward with apps to leverage wearable tech and actively monitor health. These simple acts of digitization have facilitated the creation of ginormous data lakes, which can be leveraged on the rails of AI to generate insights for every player in the ecosystem. Hospitals can improve their decision support systems, pharmaceuticals can understand disease and immunity trends, supply chains and equipment manufacturers can forecast demand and insurance firms can verify claims better.

The progress so far looks extremely promising until we start analyzing the caveats surrounding these developments. The growing concern around data privacy is a matter of concern, especially when it comes to something as personal as data in patient profiles. Also, the healthcare industry alone contributes at least 4.4% of the global emissions and therefore adoption of AI must assist in reducing this and not make matters worse.

Governments globally are yet to establish policy making centered around technology and especially AI in crucial sectors like healthcare. These would not only reinforce development but also enhance economic performance by minimizing vulnerabilities and creating new-age employment opportunities.

Amidst the entire ocean of advancements, it is important to acknowledge the primal purpose of survival and longevity. In the emerging world with health adversities, people require assurance, however small, that there is hope, and AI might be the exact hope we are looking for.