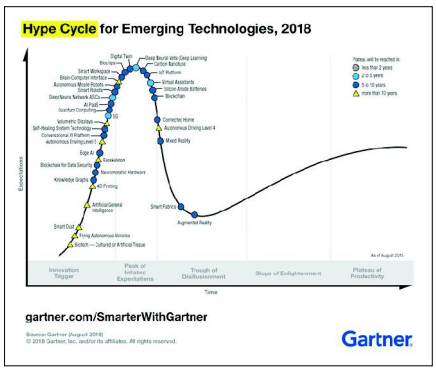
Rethinking the role of Informatics in Clinical Imaging

Technology has been the backbone of Clinical Imaging. Right from the inception of this field of diagnoses until recent times, the technological leaps have contributed to the development of modalities and viewing capabilities for the radiologists. Historically, major breakthroughs had happened in how technology was developed to open up an entirely different perspective of viewing the patient. Subsequent refinements over the years had made these technological miracles into efficient and effective diagnoses tools that provide greater insights, improve efficiencies, and enable radiologists to manage a large body of data from high-end modalities in an efficient manner and improved software processing techniques to process information.

We are witnessing an era of technology usage where the hardware and software have reached a capability to provide solutions that were unthinkable a few years back. The hardware now is extremely capable and miniaturized. The present-day typical laptop is more powerful than the earlier day's high-end mainframes and takes up a fraction of that physical space. The current cell phone is more powerful than the computer that was used in the Apollo program to land men on the moon. The miniaturization has led to the development of scaled-down components to be used in clinical settings. The processing power has increased many folds to make possible some complex computing tasks that were not possible earlier. Advancements in communications technology are revolutionizing healthcare and with the advent of 5G remote healthcare and remote surgeries will become even more viable.

Clinical Imaging Informatics plays a crucial role in the entire environment by acting as a bridge between the clinical end users and the available technology solutions. It further provides a layer that deals with quality and efficiencies for the entire setup so that the most optimal solution is available for the radiologists. Healthcare Informatics is defined as "the integration of healthcare sciences, computer science, information science, and cognitive science to assist in the management of healthcare information" (Saba & McCormick, 2015, p. 232). Such integrations provide the depth and breadth within the technology solutions.



The disruptive technology trend that is influencing healthcare at an exponential rate is Artificial Intelligence (A.I.). Everyone has heard of it and commercial entities are trying to using these buzz words in their products where possible. As with most of the technology inductions, they typically ride on the Gartner Hype Curve (https://www.gartner.com/smarterwithgartner/5-trends-emerge-in-gartner-hype-cycle-for-emerging-technologies-2018/) which starts off with the technology trigger, peaks off with inflated expectations, goes down a trough of disillusionment, emerges through with some enlightenment and finally tapers off with a plateau of productivity. However, a rational look at this technology evolution does foresee a deep impact on how Clinical Imaging will move forward in the future.

Artificial Intelligence will become pervasive in all areas of healthcare including Clinical Imaging. Just like most of the technology has become ubiquitous and has become a part of our lives, A.I. will permeate into a wide area of healthcare. The impact is not only in terms of technology but it has its social implications as well. A.I. will become more of an "Assistive" Intelligence as it becomes

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pervasive and in some specialized domains, it will actually act as artificial intelligence per se. How we adapt our workings and our lives will define how we move forward in the future. Data scientists already are finding the integration of Deep Learning systems in Clinical Imaging and new applications are coming up very quickly. Soon we will see the integration of these isolated implementations of A.I. in Clinical Imaging into comprehensive intelligent assistive systems that will assist and augment radiologists, technologists and physicians to have a deeper understanding, better diagnoses and improved workflows. They will become highly aware, context sensitive intelligent tools for radiologists.

What is certain is that Clinical Imaging will change the way technology solutions will come forth for use. It is imperative to rethink the role of Informatics in Clinical Imaging so that the synergy results in better, efficient and quality based healthcare.

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