

Industry 4.0: Use of Digitalization in Healthcare ☒

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Abstract

The primary objective of this chapter is to examine the AI applications for healthcare 4.0. Using a wide range of contemporary technologies, such as digitization, artificial intelligence, user response data (ergonomics), human psychology, the internet of things, machine learning, big data mining, and augmented reality, one of the great success stories of our day is healthcare. Worldwide life expectancy has increased due to the tremendous advancements in medical research. But when people live longer, healthcare systems must deal with more people needing their services, more money spent on them, and a staff that finds it more challenging to care for patients. A healthy, productive society depends heavily on the healthcare industry, making it one of the most critical industries in the larger big data environment. Artificial intelligence (AI), which builds on automation, has the potential to transform healthcare and assist in addressing some of the issues mentioned above. AI can support healthcare professionals, including physicians and nurses, in their day-to-day jobs. Artificial intelligence (AI) can improve patient outcomes by enhancing the quality of life and preventive care and producing more accurate diagnoses and treatment regimens. This book provides an overview of the most recent advancements in artificial intelligence (AI) applications in biomedicine, encompassing pharmaceutical processing, disease diagnosis, patient monitoring, biomedical information, and biomedical research. A summary of the most recent developments in the use of AI in healthcare is also provided, along with a road map for creating safe, dependable, and efficient AI systems and a discussion of potential future directions for AI-assisted healthcare systems. Numerous uses of AI exist in the medical field. Healthcare 4.0 has brought about a paradigm shift in the healthcare industry, drawing inspiration from Industry 4.0. Therefore, how the digital revolution in healthcare will affect the quality of medical care is still being determined. This study results will help the new researchers and healthcare institutions.

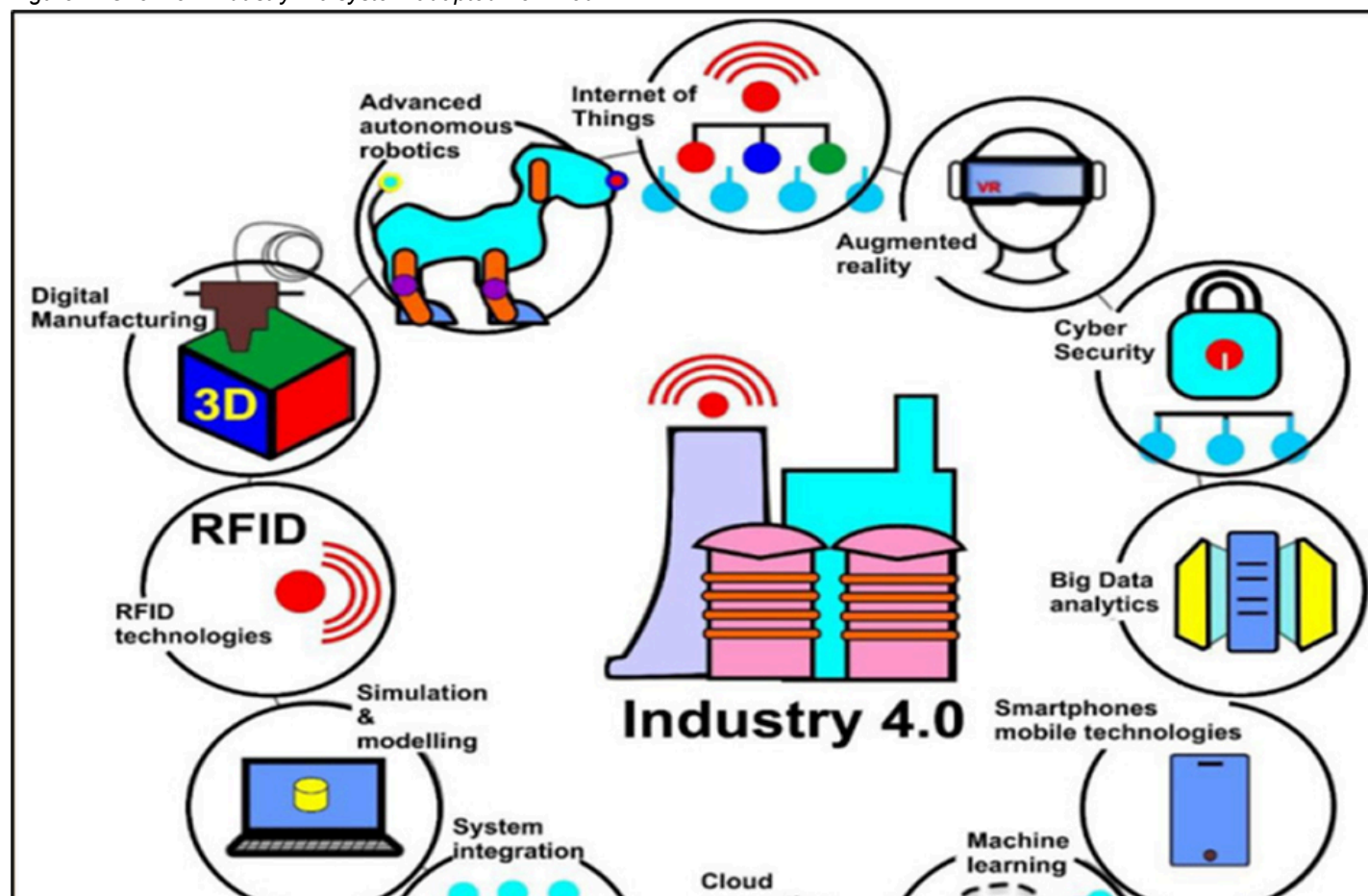
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Introduction

Healthcare is moving away from traditional hospitalization care and toward more virtual, distributed care that extensively uses cutting-edge technologies such as AI, DL, home-based healthcare, and robotics. Fundamental changes will affect the healthcare business in the future. Healthcare will be provided as a continuous wellness integration, emphasizing preventive and early intervention rather than the diagnosis goal method. The emergence of intelligent and data-driven technologies has pushed the major shift from traditional medicine to health 4.0. The emergence of the IoT (Dogaru, 2020; Popov et al., 2022). Healthcare recommendation systems have evolved as a driving force behind offering patient-centered, individualized healthcare services under this umbrella. Recommendation systems are computer programs that make judgments based on accurate input data and important health data obtained by wearable devices, implanted technology, and different sensors. As a result, to comprehend the most recent advancements in the support better. The path from healthcare 1.0 to healthcare 4.0 is examined to identify the technological sectors enabling digitalization. The healthcare industry has previously undergone numerous rounds of the technology revolution, beginning with healthcare 1.0, when practitioners physically maintained patient records. Healthcare 2.0 followed, with online technologies replacing paper-based human documentation (Goel et al., 2020; Popov et al., 2022). Healthcare 3.0 has developed to the point where smart devices may now be purchased. Healthcare 4.0 differs from its forebears in allowing many different gadgets to interact with others. Industry 4.0 is a well-known fact that looks to satisfy a wide range of medical demands, with many studies being undertaken in this field. As a result, it's critical to understand how Industry 4.0 may help satisfy various health demands by leveraging technology breakthroughs. Healthcare professionals are exposed to significant amounts of stress daily. Even in training, doctors and healthcare workers face enormous responsibilities and chronic stress while operating in a competing environment that fosters tension. Digitalization in healthcare has created massive electronic patient records (Shishkin et al., 2021). Health 4.0 is a new concept derived from Industry 4.0, which marks the fourth industrial revolution. Smart devices are at the heart of the idea that they can access vast amounts of data and make judgments without human intervention. Healthcare 4.0 improves the quality, adaptability, efficiency, and reliability of healthcare delivery by enhancing the patient experience. IoT and intelligent algorithms are all connected and used in healthcare professionals. Figure 1 Overview Industry 4.0 system.

Figure 1. Overview industry 4.0 system adapted from ncbi



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