Intelligence Science in Digital Healthcare Systems

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Abstract

Intelligent science (IS) is an interdisciplinary subject, which dedicates to joint research on informatics and technology of intelligence by brain science, artificial intelligence, cognitive science, data science and others. IS is devoted to create intelligent computer software that models the human behavior. The main goal of IS is to make computers smarter by creating intelligent algorithms that will allow a computer to mimic some of the functions of the human brain in selected applications. All of these applications employ knowledge base and differencing techniques to solve problems or help make decisions in specific domains.

On the other side, digital healthcare systems (DHS) are smart systems and based on the concepts, methodologies and theories of many sciences, e.g. artificial intelligence, data science, social science, cognitive sciences, life sciences and others. Advances in digital DHS domains highlight the need for IoT and ICT systems that aim not only in the improvement of human's quality of life but at their safety too. The well-known smart healthcare models are; Real-time monitoring devices, Computer-aided surgery devices, Telemedicine devices, Population-based care devices, Personalized medicine from a machine learning perspective, Ubiquities intelligent computing, Expert decision support systems, and Health 2.0.

This talk discusses the potential role of AI methodologies in intelligence science as well as the intelligent computing paradigms, which are used in developing the DHS.

The following three paradigms are presented:

(a) an ontological engineering,

(b) case-based reasoning,

(c) data mining and knowledge discovery.

Moreover the talk presents, the research results of the author and his colleagues that have been carried out in recent years AIKE-Labs at Ain Shams University, Cairo, Egypt.

Keywords 1

AI, Digital Healthcare Systems, Intelligence Science, Smart Systems, Health 2.0.