

Artificial intelligence (AI) in biomedical engineering

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Abstract

Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. Recent advances and applications of artificial intelligence (AI) in medicine via emphasizing this research area with novel biomaterials technology have shown great interest in medical applications. The way AI rapidly processes large amounts of information and arrives at likely causes for symptoms can drastically reduce the diagnosis-treatment-recovery cycle for many patients. The present seminar is divided into two parts; in the first part I will discuss the basic principle of the AI technology. In the second part, I will discuss the recent applications of AI technology in healthcare. I will further show some of our recent project in which AI technology has been used in biomedical engineering including in cancer, diabetes, biosensor, and tissue engineering. Historically, the term “artificial intelligence” dates to 1956 when it was first used in a conference at Dartmouth College in the US. Since then, the development of artificial intelligence has in part been shaped by the field of neuroscience. By understanding the human brain, scientists have attempted to build new intelligent machines capable of performing complex tasks akin to humans. Indeed, future research into artificial intelligence will continue to benefit from the study of the human brain. While the development of artificial intelligence algorithms has been fast paced, the actual use of most artificial intelligence (AI) algorithms in biomedical engineering and clinical practice is still markedly below its conceivably broader potentials. This is partly because for any algorithm to be incorporated into existing workflows it has to stand the test of scientific validation, clinical and personal utility, application context, and is equitable as well. In this context, there is much to be gained by combining AI and human intelligence (HI). Harnessing Big Data, computing power and storage capacities, and addressing societal issues emergent from algorithm applications, demand deploying HI in tandem with AI.

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Biography

Hossein Hosseinkhani, Chemical Engineer, has 30 years of experience in biomedical engineering in both academia and industry in biomedical engineering research and development, which includes several years of basic science research experience in a number of premier institutions related to the structure and function of biomaterials, and in polymer-based medical implants development in the medical

device industry. He is inventor of 22 International patents, several of which are licensed to companies acting in the biomedical fields and translated to 7 commercial products. He authored more than 100 scientific papers published on peer-reviewed Journals, 5 books (H-index: 46 Google Scholar). He is the founder of Matrix, Inc. a world leading biotech company dedicated to healthcare technology to improve patient's quality of life..