Application of IT Systems in Health Care*

Adam KULA

Joint Doctorate School, Department of Industrial Informatics, Faculty of Materials Science,
Silesian University of Technology, Krasinskiego 8, 40-019 Katowice, Poland

Zygmunt KAMINSKI

Chairman of the Supervisory Board KAMSOFT S.A.,
1 Maja 133, 40-235 Katowice, Poland

Correspondence should be addressed to: Adam KULA; akula@kamsoft.pl

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Abstract

Scientific discourse has recently embraced the application of control systems theory as a framework for characterizing health performance. In this scientific article, we comprehensively examine various aspects of IT systems for healthcare, including their complexity and interaction in modern healthcare practice. The primary goals of health cybernetics include the development of relevant information (IT) systems, artificial intelligence (AI) systems, expert systems, decision-making systems, and various databases, which aim to improve the health of patients and the health of the public throughout the control horizon. Presented a theoretical framework that sheds light on the understanding and exploration of the complexity of healthcare systems, based on the degrees of interconnectedness exhibited by system components. In addition, the concept of control systems in the domains of health management and management of health entities is explained. This paper presents a non-standard approach that attempts to characterize in a mathematical way the processes taking place in health care depending on multidimensional external factors. Using illustrative examples drawn from existing literature and proprietary research, it presents and explains the practical feasibility of this approach to understanding, researching, and effectively managing complex healthcare systems. Explained theories will help to optimize processes in health care units from the point of view of the macro scale. The analysis conducted to factorize the functions of ongoing processes in health care will make it possible to categorize and define the collected data, which after aggregation will allow for the creation of health prediction models.

Keywords: Artificial intelligence (AI), cybernetics, healthcare, health management