ABSTRACT

In this chapter, the authors present Intelligent Expert Decision Support Systems (IEDSSs) technology and conceptual models of Expert systems (ES) for Human-Operator (H-O) of different areas and Air Navigation System (ANS) too. The authors demonstrate some interesting applications of IEDSS. Intelligent Expert Decision Support Systems technology is a challenging field that has witnessed great advances in the last few years. Artificial intelligence (AI) theories and approaches receive increasing attention within this emerging technology. Researchers have been used the AI concepts and theories to develop a robust generation of IEDSSs. Moreover, the convergence of AI technologies and web technologies (WT) is enabling the creation of a new generation of web-based IEDSSs for all domains and tasks. This chapter discusses the AI methodologies and techniques for developing the IEDSSs. Two most popular paradigms are discussed namely; case-based reasoning and ontological engineering. Moreover, the chapter addresses the challenges faced by the application developers and knowledge engineers in developing and deploying AI-based expert decision support systems. In addition, the
Intelligent Expert Decision Support Systems

Intelligent Expert Decision Support Systems (IEDSSs) represent a special kind of knowledge-based systems. Such systems permit the knowledge and experience of one or more experts to be captured and stored in its knowledge base. IEDSSs are based on many disciplines such as: cognitive science, computational neuroscience, philosophy, artificial intelligence, computer science and knowledge engineering. IEDSSs are smart systems that imitates the human mind. The main characteristics of such systems are the ability of inference, reasoning, perception, learning, non-algorithmic and knowledge-based systems. To a limited degree, AI concepts permits IEDSS to accept knowledge from human input, then use that knowledge through simulated thought and reasoning processes to solve problems. Many types of IEDSSs are in existence today and are applies to different domains, e.g., air navigation, geology, biological sciences, economy, medical sciences, health care, commerce, and education (Greer, 1995; Salem, 2011).

This paper is organized as follows; the second section introduces an overview of the knowledge representation and reasoning techniques and methodologies for developing the IEDSSs. In the third section we present the Case-Based intelligent expert decision support systems. Sections four, five and six describe the ontological engineering, data mining and agent-based approaches and methodologies for developing such respectively. The seventh section gives an overview of some applications of IEDSSs in healthcare domain developed by the author and his colleagues at AIEK Labs-ASU. The eighth section discusses the difficulties and challenges. The last section draws conclusion and perspectives.
Socionics and Sociometry Diagnosting of Air Navigation System's Operator
www.igi-global.com/chapter/socionics-and-sociometry-diagnosting-of-air-navigation-systems-operator/196095?camid=4v1a