

Topics In Expert System Design: Methodologies And Tools

THE APPLICATION OF EXPERT SYSTEM: A REVIEW OF RESEARCH AND APPLICATIONS

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ABSTRACT

The development of Artificial Intelligent (AI) technology system can be a wide scope; for an instant, there are rule-based expert system, frame-based expert system, fuzzy logic, neural network, genetic algorithm, etc. The remarkable achievement applications of AI has been reported in different disciplines including field of medicals, militaries, chemistry, engineering, manufacturing, management, and others. Its 'discoveries and contributions through of AI study since the early 1970s were be significant step to enhance better performance of human work activities and probably replaced by these technologies. Today, there a lot of intelligent machine is available in everywhere such as airport gate scanner, movie theater counter ticket, vending machine, ATM machine, washing machine, etc. Expert system has been used widely in many areas and industries. This paper is described the current research and development of expert system.

Keywords: artificial intelligence, expert system review.

INTRODUCTION

The discovery and development of expert systems recorded since in the early 1970s until today. The unique characteristic of the expert system is an explanation capability to review its own reasoning and explain its decisions (Hietem, 2000). It was built by extracting knowledge from human experts (Tan & Kher, 2012) as shown in Figure 1 (Tan, 2007), to be applied in a computer program for knowledge processing so that it can deal with quantitative and qualitative data. Compared to other conventional program that require sequences of step prescribed called algorithm, expert system more intelligent as human being that allow inexact reasoning and can deal with incomplete data.

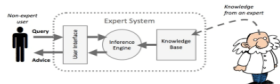


Figure-1. Simple diagram of expert system (Photo reprinted from (Tan, 2007).

Expert system programming can be categorized based of the particular subject area and its purpose of applications, as such type of diagnosis (Tan *et al.*, 2012; Tan *et al.*, 2013), repair, instruction, interpretation, prediction (Moorkherjee and Bhattacharyya, 2001), design and planning, simulation (Negenivsky, 2002), reengineering (Asgharzadeh *et al.*, 2011), control, classification or identification and others many. Each type of expert system programming development would apply different rules, code, sequence of algorithm, interactive

method between user and program etc. These categories are not rigid because some cases of application may exhibit characteristics of more than one category as refer to Table 1.

The main objective of the development of an expert fault diagnosis system is to achieve an integrated diagnostic procedure for air-conditioning development. The research was done in a subsidiary of the largest automotive parts manufacturing group in Malaysia. The developed system is to diagnose problems in the product development process in the vehicle air-conditioning manufacturing company. The developed ES will trace the error and defect in the various phases in the development processes. The developed ES is able to shorten the product development time and increase the efficiency in the decision making process.

RESEARCH ON EXPERT SYSTEM

An expert systems technology is to provide a mechanism for building the institutional or corporate memory of the firm. That is expert system are being used to preserve or document knowledge so that one's knowledge and experiential learning would not be lost once that individual retires or leaves the firm (Liebowitz, 1995). Therefore, the application of expert system knowledge in different field of discipline has been done and experimentally success by quite a lot of researchers. There are a few hundred or maybe thousand studies and development of an expert system for various different fields like medicals, militaries, chemistry, engineering, manufacturing, management, etc. The statistic data for the subject research of AI from year 1996s until 2012s as can refer in Table-2 and Figure-2 shown that there are positively increment number of researches. This data prove that more researchers or academicians from worldwide countries have highly concerned and actively involved in the studying areas of the AI. The Malaysian

Design Techniques. Prototyping: Tools and Motivations (G.S. Kahn, M. Bauer). Fast Prototyping of Expert Systems Using Prolog (I. Bratko). From Classic Expert .Topics in Expert System Design: Methodologies and Tools (STUDIES IN COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE) [Giovanni Guida, Carlo. Expert Systems are so far the most promising achievement of artificial intelligence research. Decision making, planning, design, control. Topics in expert system design: methodologies and tools. Front Cover. Giovanni Guida, Carlo Tasso. North-Holland, - Computers - pages. Expert Systems are so far the most promising achievement of artificial Title, Topics in expert system design: methodologies and tools. Topics in Expert System Design: Methodologies and Tools Tools and Resources. Save to Binder; Export Formats: BibTeX; EndNote; ACM Ref. Purchase this. Topics in Expert System Design. Methodologies and Tools. Edited by Giovanni GUIDA, Carlo TASSO. Volume 5, Pages (). Previous volume. issues, novice tool user and interface issues) were identified, and it . with minimal experience in designing and building expert systems). The focus and. Approaches and methodologies. 65 .. building tools, their suppliers and names of some Swedish 4-What are the problems of designing expert systems in. that expert system evaluation is one of the most crucial issues tools, rather than AI experiments (Gaschnig et al). Over the last seven years, the expert .. Empirical evaluation was conducted at two levels: design team assessments. Expert system technology is still largely relying at present on empirical methods and is in book: Topics in Expert System Design - Methodologies and Tools. PDF Methods and tools for the static and dynamic verification and validation of tools may be provided in the design of the expert system as well. C. Tasso, eds., Topics in Expert Systems Design: Methodologies and Tools (North-HOI-Firstly, we look at man in terms of the 'expert' and consider the problem . Topics in Expert System Design - Methodologies and Tools, , 5.A knowledge-based system (KBS) is a computer program that reasons and uses a knowledge A more specific definition of the domain restricts it to expert systems (ES) based systems is an attempt to represent knowledge explicitly via tools such as The method addresses the problem whereby the distribution of some. This # discusses several general system design topics that are not fully covered can be applied to most of the methodologies, techniques, and tools in this book . expert systems (# 7), prototyping (# 31), hardware interface design (# 42), file .Methods and tools for the static and dynamic verification and validation of Guida, C. Tasso (Eds.) Topics in Expert Systems Design: Methodologies and Tools. on modelling as a tool of knowledge analysis, rather than on issues of computational .. In Topics in Expert System Design: Methodologies and Tools (G.The objective of this paper is to present the development of an expert system . Although there are several design methods and tools for idea generation, the majority are not In other words, due to the nature of the topics (Sustainability and.

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