



شبكة المعلومات الجامعية

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شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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التوثيق الالكتروني والميكروفيلم



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بالرسالة صفحات

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B1. EAO

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Intelligent Software Agent as Applied to Nuclear Application

A Thesis submitted in accordance with the requirements of the
University of Menoufia for the degree of Master of Science

(Computer Science & Engineering)

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Submitted for the partial fulfillment
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بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم

صدق الله العظيم

ACKNOWLEDGEMENT

Special thanks to Prof. Dr. Amr A. Omar, Head of Operational Safety Dept., National Center for Nuclear Safety, Atomic Energy Authority, for supervising the thesis and his valuable and effective suggestions through this work.

Deep thanks to Assoc. Dr. Hamdy M. Kelash, Faculty of Electronic Engineering, Dept. of Computer Science & Engineering, Menoufia University for his support and valuable supervising during the work.

I deeply thank Assoc. Dr. Nabil M. Ayad Head of Computer Laboratory Reactor Dept., Atomic Energy Authority, for suggesting the topic of the thesis. Also, I deeply indebted to him for his fruitful discussion during the progress of this work and the continuous support, encouragement, and kind cooperation.

I would like to express my special and great thanks to my family, specially my wife, to their patience and invaluable encouragement during my work of the thesis.

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ABSTRACT

The software programs and applications have become very important due to their role in publishing and distributing the information and culture to all people allover the world. The software systems, therefore, became more powerful and, at the same time, more complicated due to the rapid growth in the application requirement and the expected outputs from these applications. Many of the software developers are working hard to create and develop software systems that are much easier than the complicated systems that are already used.

In this thesis, we implement an agent system as a one of these modern systems that are used in the information systems. A survey of the software agent systems has been performed, including the architecture and the characteristics of these systems, to expose the different capabilities of them in order to make use of these capabilities in the suggested agent system. Also, a review of the different types of the enhanced database systems has been done to understand the main parameters that characterize these systems, especially the intelligent ones.

Then, in the next part of the thesis, an implementation of the ISNA (Intelligent Software Nuclear Agent) has been performed. ISNA as a one of the information systems possesses a set of the data retrieval capabilities such as detailed search, sorting, reporting, and printing facilities.

The suggested agent system includes intelligent characteristics that make this agent has a different personality than other traditional software systems. These intelligent characteristics help the agent to perform its tasks rapidly

and efficiently. The users of the system benefit from these characteristics by saving time and effort when using the system.

In ISNA agent, we applied some of the intelligent characteristics such as the learning ability and the community ability through three main tasks. These tasks are: 1st. the agent has the ability to redo the latest search action of the user, 2nd. the agent can memorize the not found words and it does not repeat the searching operation about these words again, and the 3rd. is that the agent can get new information from the users and reuses these information as a new knowledge for the new user.

A performance evaluation of the ISNA system has been performed. This evaluation was done to show the effects of some operation parameters on the overall performance of ISNA. These parameters are the size of the information itself (no. of data records), the used database techniques to implement the raw data, and the cache memory as a hardware parameter.

The suggested agent, ISNA was applied successfully instead of the current information system used in the various nuclear research centers of the Atomic Energy Authority. The replaced system is called INIS (International Nuclear Information System) and it uses the traditional techniques for data retrieval operations. So that, INIS has contained some drawbacks and has no intelligence. The main target of our thesis was to overcome these drawbacks of INIS system and at the same time to present the ISNA agent system with its powerful characteristics to save effort and time for users searching for nuclear information.

ABBREVIATIONS

		Page No.
AEA	Atomic Energy Authority	1
DBMS	Data Base Management System	37
DSN	Data Source Name	114
EDS	Enhanced Database Systems	44
IAEA	International Atomic Energy Authority	54
IDB	Intelligent Data Base	44
INIS	International Nuclear Information System	1
ISNA	Intelligent Software Nuclear Agent	1
JDK	Java Development Kit	33
KQML	Knowledge Query and Manipulation Language	13
LAN	Local Area Network	109
MFC	Microsoft Foundation Class	47
NLI	Natural Language Interfaces	48
ODBC	Open Data Base Connectivity	113
OLE	Object Linking and Embedding	100
RADL	Reticular Agent Definition Language	19
RDBMS	Relational Data Base Management System	38
RDC	Remote Data Control	114
RPC	Request Protocol Communication	111
SQL	Structured Query Language	18
VLDB	Very Large Data Base	7

KEYWORDS

Intelligent software agents, Enhanced database systems, Agents approaches, Agents classification, Trivial Learning, Agent actions, Query optimization, Linked tables, Database performance, Agent capabilities, Intelligent characteristics, Learning tasks, Autonomy, Community, Adaptation, Deployment.

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