

BORANG PENGESAHAN STATUS TESIS[^]

JUDUL: A RECOMMENDER AGENT FOR E-LEARNING SYSTEM

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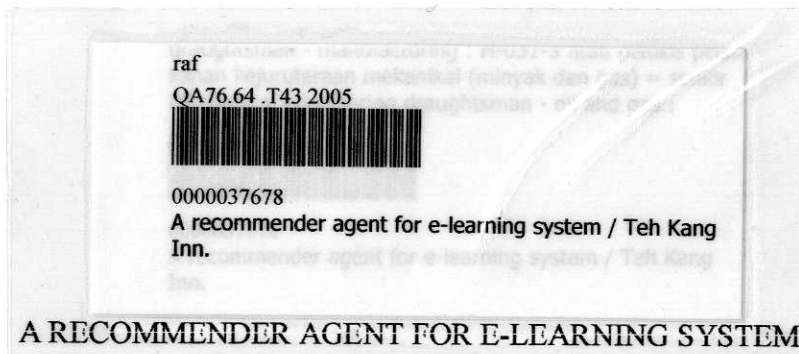
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DEDICATION

This thesis is dedicated –

To my beloved parents, who give me fully spiritual support.

To my loving supervisor, who taught me, the value of completing a project.

And,

To photography e-Learning users, who will use the Internet to grow, learn, collaborate,
and pursue great dreams.

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ABSTRACT

A recommender agent in an e-Learning context is a web-based system that tries to intelligently recommend actions to online learner. A recommender is an agent that sees what a user is doing and tries to recommend learning activities of action it thinks would be beneficial to the user. This recommendation could be an on-line activity such as guiding online learner with learning contents, suggesting tips for learner, advising learner as a site map, or could be simply a web contents resource. The e-Learning context is about digital photography. A recommender which an interface animated agent could recommend online digital photography learning activities or shortcuts in a course web site to improve course material navigation as well as assist the online learning process. The objectives to build such an agent to make e-Learning more for user centric, gives real support for the just-in-time learning process and provide motivational support to fully integrate learning. The methodology use for development is calls ADDIE model that consist of analysis, design, develop, implement and evaluation. A recommender agent is proposed to improve the integration between learner and e-Learning system and satisfy learner requirements.

ABSTRAK

Agen pencadang untuk e-Pembelajaran merupakan satu sistem web aplikasi yang cuba memintarkan segala proses pengenalan kandungan e-Pembelajaran kepada pelajar. Agen akan membantu pelajar dalam aktiviti e-Pembelajaran dan mencadangkan apa yang difikirkan akan memanfaatkan pelajar. Proses cadangan ini boleh dibentukkan sebagai *on-line* aktiviti seperti memimpin pelajar dalam isi kandungan pembelajaran, mencadangkan jalan alternatif pembelajaran kepada pelajar, menasihatkan pelajar sebagai penunjuk jalan atau boleh dijadikan sumber kandungan web. Subjek pelajaran adalah berkaitan dengan *digital photography*. Tujuan untuk membangunkan agen pencadang adalah untuk menjadikan sistem e-Pembelajaran lebih fokus kepada pelajar dan meningkatkan pengendalian kandungan kursus supaya sepanjang pembelajaran proses dapat diuruskan dengan lancar dan meningkatkan interaksi antara pelajar dengan sistem e-Pembelajaran. *Methodology* yang digunakan adalah ADDIE model yang terdiri daripada lima fasa iaitu analisa, rekabentuk, pembangunan, pelaksanaan dan evolusi. Agen pencadang dalam e-Pembelajaran dibangunkan supaya dapat memuaskan kehendak pelajar dan seterusnya memajukan sistem e-Pembelajaran pada masa akan datang.

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LIST OF ABBREVIATION

ABBREVIATION	DESCRIPTION
RAEL	A Recommender Agent for e-Learning System
CD-ROM	Compact Disc-Rom
ERD	Entity Relationship Diagram
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
HTML	HyperText Markup Language
ADDIE	Analysis, Design, Develop, Implementation, Evolution
CF	Collaborative Filtering
IIS	Microsoft Internet Information Service
SQL	Structure Query Language
ASP	Active Server Pages
Dpho	Digital Photography e-Learning Studio
DPHO	Digital Photography e-Learning System Testing
FAQ	Frequently Asked Questions
DVD	Digital Versatile Disk
DB	Database
SMTP	Simple Mail Transfer Protocol
FTP	File Transfer Protocol
XML	Extensible Markup Language
DHTML	Dynamic HyperText Markup Language

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CHAPTER I

INTRODUCTION

Introduction is a chapter that defines the subject of the project report. The introduction consists of some titles such as project background, problem statement, objectives, scope, project significance, expected output and conclusion. It is an outline of the project performance or development and giving sufficient background to understand the rest of the report and what has been done previously.

1.1 Project Background

The project's name is A Recommender Agent for e-Learning Systems (RAEL). A recommender system in an e-Learning context is an animated agent that tries to intelligently recommend courses of action it 'think' would be beneficial to the learner. Recommender agents can show guidance or give suggestions to a user and make recommendations accordingly. The agents learn by tracking the actions of the user or by seeking explicit feedback from the user. The most common applications of recommender agents are web content filtering systems and e-Commerce shops. These agents are used to discover a person's interests in the hope of providing useful information or encouraging a sale. An e-Learning system is a comprehensive software package that supports courses that depend on the World Wide Web for some

combination of delivery, testing, simulation, discussion, or other significant aspect. It is means a learning system can be described as a multifaceted software package that provides an e-Learning solution.

There is a booming market in the development of such e-Learning systems, fueled by venture capital companies anxious to reap the benefit of the new technological opportunities. The e-Learning is the delivery of learning using electronically based approaches, mainly through the Internet, intranet, extranet, or web. Web-based learning environments are becoming very popular. Typical e-Learning environments include course content delivery tools, synchronous and asynchronous conferencing systems, polling and quiz modules, virtual workspaces for sharing resources, white boards, grade reporting systems, logbooks, assignment submission components, etc. However, the REAL project is not fully functionality as the web-based learning environments that mentioned above. A recommender agent is builds that could recommend on-line learning activities or shortcuts in course web site or could be simply a web resource to help user.

For building the RAEL project, the background concept come out actually is modifying from the concept of agent that doing recommendation actions in purchasing process to customer in e-Commerce websites. Current recommender systems in e-Commerce use the concept of collaborative filtering or data mining for personalizing recommendations. This technique is called collaborative filtering. The collaborative filtering essentially compares the interests of various users by calculating the correlation between users. But, the animated recommender for REAL project would action as frequently asked questions (FAQ) function to guide user.

Building an animated agent that include multimedia element in order to build a model that represents on-line user behaviors, and uses this model to suggest activities or shortcuts for e-Learning web resources. These suggestions can help user in better navigate the online material by finding relevant resources faster using the recommended shortcuts and assist the user to choose pertinent learning activities.

1.2 Problem Statements

Many of the existing e-Learning systems do not seem to take full advantage of the possibilities offered by current technologies essentially because they are designed to reflect the classic, “lecture style”, teaching approach. For instance, e-Learning systems often propose a learning agenda that does not reflect the current user’s needs, interests, etc.

In particular it is believe that most of the e-Learning systems rely too much on the traditional learning approaches and therefore suffer the same flaws such as:

(a) The e-Learning systems are teacher centric, and not sufficiently user/people centric.

The e-Learning systems are designed in a way to facilitate the work of the professors, and not to support the individual learning process of the student. As a consequence, students remain relatively passive and dependent on the teacher, and do not adopt the attitude of taking control of their own learning process.

(b) The e-Learning systems are often too disconnected from the learner’s current activities and goals.

The e-Learning systems remain too dissociated from knowledge activities and they often propose a learning agenda that is not synchronized with the current user’s needs, context, level of detail, etc. Too little effort is made to collect and exploit knowledge of student’s interests or motivations, learning styles, personality, psychological needs, etc. This knowledge should be used in order to improve the effectiveness of the learning process.

(c) Lack of e-Learning website on digital photography

Online photography learning is more popular among certain groups like professional photographer or photography educators. So, the online photography context is more on professional knowledge and not easy to understand.

(d) Limited interactivity.

The e-Learning systems still rely on relatively passive material that the learner has to absorb rather than more active experiences in which the learner is able to experiment with the new knowledge in a safe, free environment.

1.3 Objectives

Objectives represent the first attempt to establish expectations for any new system. This RAEL project will develop new online learning processes and supporting information system processes. In this section is aim at characterizing the most important challenges that an e-Learning system should address.

The objectives of the project:

(a) To make e-Learning more focus on user centric and personalized.

The e-Learning systems should put the user/learner at the centre, and also become a key component for managing individual knowledge capital and competence. On the learner side, it would be very useful if the system could automatically guide the learner's activities and intelligently recommend on-line activities or resources that would favor and improve the learning.

(b) To make photography e-Learning more popular.

The e-Learning systems should develop a very good knowledge of the learner in order to personalize the learning experience about photography. It is provide an opportunity to the public to learn basic photography skills and the relating knowledge.

(c) To allow a real support for the continuous learning process.

The e-Learning systems should support just-in-time learning, stimulation of the learner, etc. In particular, they should provide motivational support and

stimulation. Of course, the integration of the e-Learning system with the user productivity tools makes this support seamless. So, building an animated recommender agent that will keep track knowledge about e-Learning's contents and be guidance for on-line learner. An agent is a communication bridge for e-Learning systems and learner by gives their shortcuts to do e-Learning activities.

(d) To improve interactivity among e-Learning systems and user.

The e-Learning systems should provide active interaction with the users in the form of a rich choice of interaction strategies. Agent based approaches can in particular provide a very active, cognitive and diverse mode of interaction with the user. A recommender agent if in animated image will be more attractive to users and users will find out more interesting to ask question about e-Learning and will make learning process more interactivity.

1.4 Scopes

Scope defines the expectation of a project, and expectations ultimately determine satisfaction and degrees of success. Scope also defines those aspects of a system that are considered outside of the REAL project.

The RAEL project is a web-based application system. The suggestion of the construction recommendations system is for web-based learning environments in e-Learning field that take into account profiles of on-line learners or user who interesting in digital photography e-Learning contents. It is open for those users who are interesting in digital photography field. The web portal gets four main parts such as user sign in and sign up, learning process or contents, forum and search.

At the firstly draft, a recommender agent is 2D interface agent that can integrate with user by using questions and answer format. For this project developing process, an

agent will do the recommendations using questionnaires as well as a log that is keeping track of selected recommendations by the users. Animation and limited sound performance will be under consideration to add in agent's feature while the development doing.

This recommender agent is suggested to build by modifying the combined of recommendation actions type in e-Commerce's agent that is content-based recommendations and collaborative recommendations. The methodology of the project development is ADDIE model. The ADDIE (Analysis, Design, Develop and Implement) methodology is important for web portal part of the project.

This web-based application is developing in Microsoft platform that is ASP.Net as main platform and Microsoft SQL server 2000 as a database program. For the part of multimedia, there is some graphic software needed like Adobe Photoshop 7, Sound Forge 6.0 and Macromedia Flash MX. Anyway, choosing suitable related software will be important consideration for further development stage.

In principle, there are two major parts in the design of such a recommender agent: a "learning" module that learns from past access patterns and infers an individual or common access model; and an "advising" module that applies the learned model at given times to recommend actions. For the web application developing, there are few modules will be developing such as registration module, login module, quiz module and forum module.

However, there are some of the boundaries and constraints of the project's product such as the recommendation actions only in e-Learning field which is digital photography by recommend e-Learning systems to user and take into account profiles of on-line learner too. A recommender agent just can doing recommendations by giving properly suggestions based on its decision making after user had done their enquiries on questionnaire asking. It is means that is user going to make their final decision because an agent just is guidance by giving shortcuts of e-Learning activities.

Project scope should be defined as explicitly as possible in the first phase of the project. Any significant deviation of functionality, cost, or timetable must be reported promptly to the appropriate supervisor.

1.5 Project Significance

The e-Learning is no longer a new phenomenon, but it has not ceased to be a hot topic. The majority of current web-based learning systems are closed learning environments where courses and learning materials are fixed and the only dynamic aspect is the organization of the material that can be adapted to allow a relatively individualized learning environment. So, to build a recommender agent that can recommend on-line learning activities or shortcuts in course web site, or running an on-line simulation by give suggestions, or could be simply a web resource.

On the learner's side, it would be very useful if the system could automatically guide the learner's activities and intelligently recommend on-line activities or e-Learning web resource. In additional, educators using web-based learning environments are in desperate need for non-intrusive in learning environment. Agent based approaches can in particular provide a very active, cognitive and diverse mode of interaction with the user among e-Learning systems. However, the RAEL project is established priorities for web applications, databases, and networks that including the use of the Internet as a strategic platform.

1.6 Conclusion

Multiple sources of information and the interactions within an e-Learning system available on web comply with a standard for interoperability and an effective flexible

implementation. A recommender agent is a web-based character that sees what a user doing and tries to recommend courses of action it thinks would be beneficial to the user. This is the idea behind some systems used in electronic commerce sites to recommend products to customers they might wish to purchase based on their previous purchasing history as well as the purchasing history of those who bought similar goods.

This project is proposed an approach to build a animated recommender agent that represents on-line user behaviors, and uses this model to suggest learning activities or shortcuts. These suggestions can help user or learners in better navigate the on-line materials by finding relevant resources faster using the recommended shortcuts and assist the learner choose pertinent learning activities that should improve their performance.

There is currently testing this recommender system approach on an on-line course. But for this project building, it will evaluate the recommendations using questionnaires as well as a log. The project will include multimedia elements like agent animated and limited sound in suggestions level. Of course, further theoretical and practical studies will give a more detailed internal structure of the proposed agent-based system and will give the possibility to design and to implement a completely functional e-Learning system. Continuously, it is a chapter which is doing fact and finding research for literature review and also including project requirements and its methodology.