AN ONTOLOGY-BASED ITINERARY PLANNING MODEL USING CASE-BASED REASONING

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AN ONTOLOGY-BASED ITINERARY PLANNING MODEL USING CASE-BASED REASONING

TONG WENG SENG

This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Artificial Intelligence)

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2015

DECLARATION

I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized without citations.

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DEDICATION

This project is dedication to my family who always gives me support and taught me that the best kind of knowledge to have is learned for its own sake. Besides, this project also dedicated to my supervisor and my friends that help me during this project developed. Thanks for all the support.

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Thank you.

ABSTRACT

Most of the people like to go for travelling. However, planning a trip can be a daunting task since most of them do know where should begin. Hence, they will rely on maps, guide books or travel agencies. This project proposes an itinerary planning model based on ontology. It provides an overview of user and tourism ontology and how they can be used for developing tourism application. Besides it explores how creating ontologies can improve the process of searching for the perfect result based on user interest

There are two separate ontologies in this project, one for user's profile and another one for tourism. The user profile ontology used to facilitate the extraction of user personal information while tourism ontology used to provide a way of viewing all the tourism in Kl.

This system is a hybrid system which incorporates with Artificial Intelligence technique that is Case-Based Reasoning (CBR). A cosine similarity function has been proposed to measure the similarity between user input and the 100 cases stored in SQL. The data having highest similarity value will be retrieved and returned as an output. By applying CBR, it will find the best suggestion for the user.

ABSTRAK

Melancong merupakan minat kebanyakan orang pada hari ini. Namun, perancangan aktiviti pelancongan merupakan salah satu masalah terutama kepada mereka yang tidak mahir untuk membuat perancangan. Oleh itu, kebanyakkan meraka akan bergantung pada peta, buku rujukan atau agensi perlancongan. Projek ini menjelaskan satu model perancangan pelancongan berdasarkan ontologi. Model ini membekalkan maklumat pelancong dan ontologi pelancongan serta menjelalskan bagaimana ontology tersebut boleh digunakan untuk membuat aplikasi pelancongan.

Terdapat dua ontology dalam projek ini iaitu profil untuk pengguna dan profil untuk pelancongan. Profil untuk pengguna adalah untuk memudahkan sistem mengeluarkan maklumat pengguna manakala ontologi pelancongan adalah untuk memberikan maklumat terhadap segelintir tempat pelancongan di KL.

Sistem ini merupakan sistem hibrid yang menggabungkan dengan teknik Kepintaran Buatan iaitu Case-Based Reasoning (CBR). Fungsi konsinus persamaan akan digunakan untuk mengukur persamaan antara input pengguna dengan data yang disimpan dalam MySQL. Data yang mempunyai nilai persamaan yang tertinggi akan diambil dan kembali sebagai output kepada pengguna.

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ERD -Entity Relationship Diagram

GA -Genetic Algorithm

ACO -Ant Colony

CBR -Case-Based Reasoning

KL -Kuala Lumpur

POI -Point of Interest

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CHAPTER I

INTRODUCTION

1.1 Introduction

Most of the people like to go for travelling to increase their knowledge and experience. However, travel itinerary planning can be considered difficult and time consuming especially for those who visits a place for the first time. Thus, most of them will rely on maps, guide books, internet or relied on travel agencies to suggest the main location or attraction worth visiting place. This project proposes to apply ontology technique and case-based reasoning to develop an itinerary planning system by supporting users in organizing long, medium and short trips, suggesting location and so on.

An itinerary planning system is an easy way for the user to plan and organize their travel plan. It is an automated planning, which involves task scheduling. It is a branch of Artificial Intelligent which normally executed by intelligent agents, autonomous robots and unmanned vehicles. It aims at generating plans that lead to some desired outcome. Today, most of the machine are run using automated planning without

human intervention. By using this system, the user just need to specific the duration and money budget into the system then the system will return itineraries planning to the user. This system allow user to schedule an n-day itinerary.

Besides, it will incorporate with Artificial Intelligent technique that is Case-based Reasoning (CBR) in the modules constructions and also provides advice to users about products they might be interested in such as points of interests. Case-based reasoning, which normally includes four different phases in the problem solving cases cycle is an effective methodology for solving this kinds of problem by retrieving and using a similar, already solved case to solve.

Since this system is implemented using CBR, it requires a large dataset. All the dataset of itinerary planning model firstly will be collected from website. From there, a case base can be constructed, which include the user type, days, budget they willing to spend and preferences according to their specifications. If a new case exists, a similarity function which is cosine similarity will be applied in order to find the best suggestion for the users.

The architecture of this system is based on a knowledge-based system. A center issue in the knowledge-based system is ontology. Ontologies include the theories about the sort of objects and properties, and relations between object that are in a domain of knowledge. With the existing of ontology, many domain experts can share and analyze their domain knowledge more explicit.

1.2 Problem Statement

Planning a travel towards a tourism destination is a complex problem solving activity especially the destination is unclear. Just give a scenario, when there has a