WEB USAGE MINING FOR UUM LEARNING CARE USING ASSOCIATION RULES

A project submitted to the Graduate School in partial fulfillment of the requirements for the degree Master of Science (Intelligent System)
Universiti Utara Malaysia

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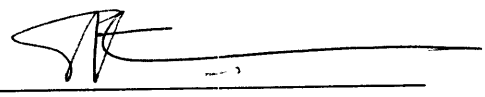
(Signature) : 

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ABSTRAK

Ledakan maklumat di dalam gerbang Web menjadikannya pilihan terbaik bagi penyelidikan perlombongan data. Aplikasi bagi teknik perlombongan data bagi gerbang Web dirujuk sebagai perlombongan Web dan telah digunakan dalam tiga pendekatan yang berbeza; Perlombongan Isi Web, Perlombongan Struktur Web dan Perlombongan Penggunaan Web. Pembelajaran Elektronik adalah salah satu aplikasi di dalam gerbang Web dimana ianya akan berhadapan dengan jumlah data yang sangat besar. Bagi menghasilkan corak penggunaan portal dan amalan pengguna, kajian ini akan mengimplimentasikan proses aras tinggi bagi perlombongan penggunaan Web menggunakan algoritma asas bagi Peraturan Kesatuan – algoritma *Apriori*. Perlombongan penggunaan Web mengandungi tiga fasa utama iaitu Preprosesan Data, Penjelajahan Corak dan Analisis Corak. Sumber utama iaitu data mentah adalah terdiri daripada fail-fail log pelayan dan ianya perlu melalui fasa-fasa dalam perlombongan penggunaan Web bagi menghasilkan keputusan akhir – set peraturan. Dengan keupayaan teknik perlombongan data, pendekatan perlombongan penggunaan Web telah digabungkan dengan asas Peraturan Kesatuan, algoritma *Apriori* bagi mengoptimumkan kandungan portal Pembelajaran Elektronik universiti. Akhir sekali, kajian ini akan membentangkan keputusan serta analisisnya supaya pihak pengurusan Web boleh menggunakan segala keputusan tersebut untuk tindakan bernilai yang sewajarnya.

ABSRACT

The enormous content of information on the World Wide Web makes it obvious candidate for data mining research. Application of data mining techniques to the World Wide Web referred as Web mining where this term has been used in three distinct ways; Web Content Mining, Web Structure Mining and Web Usage Mining. E-Learning is one of the Web based application where it will facing with large amount of data. In order to produce the university E-Learning (UUM Educare) portal usage patterns and user behaviors, this paper implements the high level process of Web usage mining using basic Association Rules algorithm – Apriori Algorithm. Web usage mining consists of three main phases, namely Data Preprocessing, Pattern Discovering and Pattern Analysis. Main resources, server log files become a set of raw data where it's must go through with all the Web usage mining phases to produce the final results – set of rules. With the powerful of data mining technique, Web usage mining approach has been combined with the basic Association Rules, Apriori Algorithm to optimize the content of the university E-Learning portal. Finally, this paper will present an overview of results with the analysis and Web administrator can use the findings for the suitable valuable actions.

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CHAPTER 1

INTRODUCTION

This chapter will discuss about the project background that contains the general overview of the project includes the brief description about the data mining technologies and Web usage mining as a part of Web mining approach. In addition, the project background sub chapters also describe the tools and software that was used for this project and also the approach that is used for the analysis purposes. The description of the project problem statement, lists of the project objectives and details of project scope and boundaries are also discuses in this chapter. Finally, the thesis organization that contains the structure of chapters that is included in this report.

1.1 Project Background

Finding useful patterns in data is known by different names (including data mining) in different communities (e.g., knowledge extraction, information discovery, information harvesting, data archeology and data pattern processing) (Fayyad *et al.*, 1996). Data mining is a burgeoning and promising research field in computer science field. Data mining is a technique used to deduce useful and relevant information to guide professional decisions and other scientific research (Chen, Han and Yu, 1996). The objective of data mining is to identify valid novel, potentially useful and understandable correlations and patterns in existing data (Chung and Gray, 1999). It is a cost-effective

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