A methodology for Automatic Derivation of Cloud Marketplace and Cloud Intelligence

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In the name of Allah, most gracious and most merciful

وَقُل رَّبِّ زِدْنِي عِلْمًا

(O my Lord, increase me in knowledge.)
(Al-Quran 20:114)

To my grandfather

CERTIFICATE OF ORIGINAL AUTHORSHIP

I I certify that the work in this thesis has not been previously submitted for a degree nor has it been submitted as a part of the requirements for other degree except as fully acknowledged within the text. I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Journal

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Conference

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ABSTRACT

From a consumer's perspective, a cloud services marketplace is essential for cloud services discovery, selection, and composition. In practice, there are some private cloud services marketplaces, such as the Microsoft Azure marketplace, which are available for consumers belonging to a given vendor only. Nowadays, with the increase in the number of cloud services advertisements, and the adoption of cloud services, the cloud services consumer-base has grown and is projected to expand significantly over time. This increase defines the need for cloud services marketplace to enable effective interaction with cloud services users. A considerable amount of research has conducted in the area of cloud service selection and composition; however, the majority of this research is focused on developing algorithms (such as matching algorithms) and assumes the availability of cloud service information.Furthermore, little attention was given to the efficient discovery of cloud services over the World Wide Web (WWW). According to our literature, no research addresses the need for cloud services marketplace. Hence, this thesis proposes to provide an automatic derivation of cloud marketplace. The design of this marketplace includes a combination of the following modules: 1) cloud services harvesting module; 2) knowledge base for cloud service module; 3) cloud service trust derived intelligence module.

The cloud services harvesting method is designed for harvesting cloud services advertisements from the web and building cloud services dataset. Such a dataset could be used by potential consumers for cloud services discovery and could be useful for future research in cloud selection, composition and recommender systems. Also, the developed cloud services repository could act as a knowledge source for constructing a standard ontology for cloud services. The knowledge base for cloud service module is designed for producing a solution toward cloud services marketplace to organise, publish and retrieve cloud services advertisements. This method involves semantically categories cloud services advertisements grounded on harvested web data to solve the issue of various cloud services advertisements. Also, this method includes the construction of the first commercial cloud services ontology-based repository for cloud services marketing. This repository contains service metadata that can be used to store service advertisements information which annotating to the domain-specific ontology concepts toward retrieving service advertisements more efficiently. The cloud services trust derived cloud Intelligence Module is designed to automatically analyzing the sentiment of cloud reviews to provide the potential consumers with real quality of service (Quality of Experience) information when making the buying decision. Also,

building cloud reviews classifier to automatically classify the reviews: positive, neutral or negative using supervised machine learning algorithms.The result of this thesis will be an intelligent methodology for an automated derivation of the cloud marketplace: cloud services harvester, cloud services knowledge base, and Quality of Experience of cloud services. This methodology will be useful to the potential consumers, cloud providers, and the research community, as it will provide easy access to cloud services advertisements information.