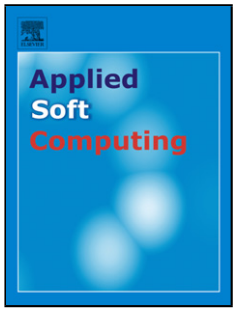

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Fuzzy QoS Requirement-Aware Dynamic Service Discovery and Adaptation

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Abstract

The integration of coherent services plays a potential role in the field of Service Oriented Applications. Achieving this potential standard crucially depends on the ability to recognize and exploit the available services based on user requirements. In general, the user preferences on Quality of Service (QoS) requirements are fuzzy in nature. In addition to that, the QoS requirements are user dependent even if the functional requirements are the same. With a large number of available services, service selection for dynamic composition at run time is a challenge. Functional and non-functional assumptions made at design time may violate at run-time. These violations require run time reaction, by adopting a run-time process. Therefore, dynamic and fuzzy QoS-aware service discovery for run-time composition and continuous adaptation is a strong requirement in service oriented computing. Considering that different users follow different fuzzy reasoning in various contexts at different times, a fuzzy inference based service selection approach has been proposed in this paper. Continuous adaptation is done, as and when a design time assumption violation is reported by a run-time monitoring system. We have implemented and tested the proposed approach and the results show its effectiveness.

Keywords: Service Oriented Applications, Service Recommendation, Fuzzy Inference System
2010 MSC: 00-01, 99-00

1. Introduction

Service oriented computation has a significant advantage to enable dynamic, distributed and effortless composition of different services. These services are provided by different independent and autonomous parties to participate in service composition to achieve large and complex tasks. Such tasks cannot be fulfilled by a single service, with reduced cost and efforts in the development,

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