UMass Dartmouth
COLLEGE OF ENGINEERING

Computer and
Information Science
Department

MASTER'S PROJECT (Fall 2012)

TOPIC: ***Multi-Attribute Based Optimal Configuration for Composite Web Services Using Linear Programming***

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ADVISOR: Dr. Haiping Xu

DATE & TIME: Friday, October 19, 2012, 10:00 am

LOCATION: Dean's Conference Room

COMMITTEE MEMBERS: Dr. Paul Bergstein and Dr. Shelley Zhang

ABSTRACT

Web services are self-contained software components; however, standalone web services are typically not sufficient for fulfilling complex user requirements. In order to meet such requirements, existing web services need to be composed into high-level ones using predefined process models for service composition. Since there could be many available services deployed over the Internet that perform similar or identical functions, it becomes essential to develop a feasible method to select the most suitable one for each task defined in the process model based on different quality of service (QoS) parameters. In this project, we demonstrate a method to obtain the optimal solution for configuration of composite web services by selecting suitable services that maximize the overall quality of the composite service and minimize the risk of service failure. We derive an objective function from a process model, and compute the optimal solution using a linear programming solver. To demonstrate the feasibility of our approach, we have developed a process model for a healthcare application, which consists of both serial and parallel components. The objective function for service selection is a linear function, which is based on multiple attributes such as service cost, service reliability and response time. Our experimental results show that our approach is efficient and effective for service selection, and thus, it may support real-time optimal configuration for dynamic composite web services.