World Academy of Science, Engineering and Technology
International Journal of Information and Communication Engineering
Vol:16, No:05, 2022

Selecting Skyline Mash-Ups under Uncertainty

Authors : Aymen Gammoudi, Hamza Labbaci, Nizar Messai, Yacine Sam

Abstract : Web Service Composition (Mash-up) has been considered as a new approach used to offer the user a set of Web Services responding to his request. These approaches can return a set of similar Mash-ups in a given context that makes users unable to select the perfect one. Recent approaches focus on computing the skyline over a set of Quality of Service (QoS) attributes. However, these approaches are not sufficient in a dynamic web service environment where the delivered QoS by a Web service is inherently uncertain. In this paper, we treat the problem of computing the skyline over a set of similar Mash-ups under certain dimension values. We generate dimensions for each Mash-up using aggregation operations applied to the QoS attributes. We then tackle the problem of computing the skyline under uncertain dimensions. We present each dimension value of mash-up using a frame of discernment and introduce the d-dominance using the Evidence Theory. Finally, we propose our experimental results that show both the effectiveness of the introduced skyline extensions and the efficiency of the proposed approaches.

Keywords : web services, uncertain QoS, mash-ups, uncertain dimensions, skyline, evidence theory, d-dominance
Conference Title : ICSOC 2022 : International Conference on Service Oriented Computing
Conference Location : Barcelona, Spain
Conference Dates : May 26-27, 2022