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**Agent-Based Cloud Service Negotiation Architecture Using Similarity Grouping Approach**

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**Abstract**

Challenges and issues in the field of cloud service negotiation framework optimization have been an active area of research. During service level agreement, the probability of negotiation conflict between the service consumers and providers is high. This may arise due to aggressive behavior, selfish misperception, vague preferences and uncertain goals of the negotiating participants. One of the key challenges identified in negotiation framework is optimizing the negotiation conflict among the negotiators. In order to minimize such conflicts, existing frameworks group the negotiation pairs that contain similar and non-aggressive behavioral patterns by exploiting the distance, binary, context dependent and fuzzy similarity approaches. These approaches get better success rate only if the dimensionality of negotiator attributes is low. As emerging real-time cloud service negotiation applications are characterized by negotiation attributes of high dimensionality, the existing approaches are inappropriate for these applications. In addition, the existing approaches group the negotiation pairs using distances based measure in two-dimensional negotiation attribute, whose value will vary for high-dimensional attributes. In this work, an Angle-based Similarity Grouping (ASG) approach is proposed that appropriately groups the highly cooperative negotiation pairs and thereby increases the success rate and decreases communication overhead.

**Keywords:**

Cloud computing, Multi-agent system, Negotiation conflict, Angle-based similarity grouping and cooperative behavior

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