# Task Allocation for Optimal System Cost Using Hierarchical Clustering in Distributed System

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## **A B S T R A C T**

In the era of rapid changing and updated technologies of computational capabilities, multiple tasks are performed in parallel using distributed system unlike single server system. Among different applications, aspects and challenges of a distributed system, task allocation is one. Task allocation is needed to be done in such a way that the optimality of the system can be achieved by minimizing the response time, system cost, balanced load with the maximum system reliability and no processor remains idle. For this purpose, a variety of algorithms have been proposed. In the proposed work, fuzzy environment for static task allocation has also been considered by taking into account triangular and trapezoidal fuzzy numbers. The fuzzy numbers are defuzzified by Robust ranking method. The clustering of tasks is done to group tasks of same nature or have similar characteristics and are then distributed evenly throughout the processors. The proposed paper employs hierarchical technique for clustering. The performance of the algorithm is assessed through illustrating examples, and the results are compared to several existing models with the aim of optimum system cost.

**Keywords:** static task allocation, defuzzification, system cost, hierarchical clustering, robust ranking method.