Abstract

Distributed computing system [DCS] offer the potential for improved performance and resource sharing. To make the best use of the computational power available it is essential to assign the tasks to that processor whose characteristics are most appropriate for the execution. In this paper we have investigated a tasks allocation problem with fuzzy execution times $e_{(i,j)}$ and fuzzy inter tasks communication times $c_{(i,j)}$ which is more realistic and general in nature. Times $e_{(i,j)}$ and $c_{(i,j)}$ have been considered to be triangular and trapezoidal numbers. The fuzzy tasks allocation problem is defuzzified and converted into crisp ones using fuzzy number ranking method. A mathematical model has been developed to determine the optimal allocation of the tasks for the crisp problem that minimizes the total cost of the program. The allocation plan that minimizes the total cost for the new crisp problem also minimizes the total time for the original fuzzy tasks allocation. Numerical examples show that the model presented in this paper offers an effective tool for handling the fuzzy tasks allocation problem.
- Gillett, Introduction to Operations Research: A computer Oriented Algorithmic Approach,

**Index Terms**

Computer Science  
Fuzzy Systems

**Keywords**

Distributed computing system; Fuzzy execution times; Fuzzy inter tasks communication times; Triangular and trapezoidal numbers; Crisp value