4 Simulation Result and Discussion

Comparison between Centralized and Distributed approach

The figure shows, the energy consumed to build the clusters by the centralized and distributed approaches using Dynamic tabu search approach. Results show that the distributed approach needs less energy consumption than the centralized approach and the gap between these energies becomes bigger when the network size increases.

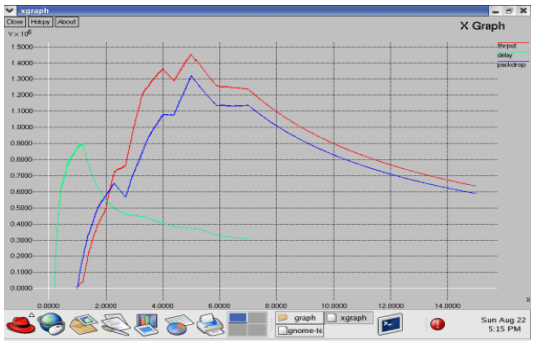

Figure3 - Centralized Approach

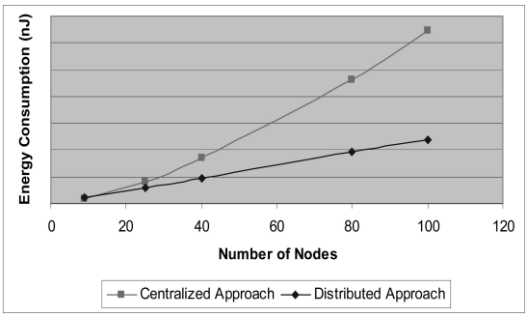

Figure 4- Comparison between Centralized and Distributed Approach

The reason behind this result is that the central node needs to generate a considerable number of messages in order to collect all the node information. The dynamic tabu search is good when compared to the normal tabu search in the memory storage.

5. Conclusions

This paper has presented a heuristic approach based on a energy efficient search to solve clustering problems where the numbers of clusters and cluster heads are unknown beforehand. The tabu search adaptation consists of defining three types of moves that allow reassigning nodes to clusters, selecting cluster heads, and removing existing clusters. Such moves use the largest size clique in a feasibility cluster graph, which facilitates the analysis of several solutions and makes it possible to compare them using a gain function. Performance of distributed approach with those of a centralized approach and we conclude that the central approach is less efficient than the distributed approach in the cluster building phase.

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