André Melon Barroso

"Escalonamento de Tarefas em Sistemas Distribuídos de Tempo Real"

Real-Time systems must deal with the problem of assigning CPU cycles to various tasks in order to meet their predefined timing requirements. In distributed systems this problem is composed of two issues: task allocation to the processors of the system (global Scheduling) and CPU cycles sharing between the tasks already assigned to a processor (local scheduling). After describing the techniques usually applied to solve both issues, we present and analyze two other mechanisms to the global tasks scheduling problem solution. The first one uses the microcanonical optimization metaheuristic to statically distribute tasks between the nodes of the system. Such mechanism leads to good results at a low computational cost when compared to other metaheuristics. The second technique is applied in dynamic global schedulers, where on-line tasks transfers between nodes are allowed. The tasks transfers aim to improve the number of tasks executed in conformity with their timing constraints. Dynamic global schedulers have as fundamental problem the difficulty to choose the best node to receive a transferred task.. The proposed technique to select the best node is based on a multiobjective fuzzy decision making method and on bayesian theory. A structured way of adding objectives to the selection considered showed to improve the results obtained without such techinique.