

ABSTRACT

METHOD FOR THE REAL-TIME ORDERING OF A SET OF NON-CYCLICAL MULTI-FRAME TASKS

Method for the real-time scheduling of an application consisting of a plurality m of software tasks executing at least one processing operation on a plurality N of successive data frames, each of said tasks i being defined at least, for each of said frames j , by an execution time C_i^j , an execution deadline D_i^j and a guard time P_i^j with respect to the next frame $j+1$, said guard time P_i^j being greater than or equal to said deadline D_i^j , the following steps being executed:

- for each task i , calculating the ratios $\frac{C_i^j}{D_i^j}$ and then searching for the maximum over all of said frames j of said ratios $\max(\frac{C_i^j}{D_i^j})$,
- comparing the sum $\sum_{i=0}^{m-1} \max_{0 \leq j \leq N-1} (\frac{C_i^j}{D_i^j})$ with the number p of processors operating in parallel over which the total computation load of the real-time application is distributed,
- if said sum $\sum_{i=0}^{m-1} \max_{0 \leq j \leq N-1} (\frac{C_i^j}{D_i^j})$ is less than or equal to the number p of processors, then concluding on the feasibility of the real-time execution of all of said software tasks distributed over said processors.