A discrete event simulation for utility accrual scheduling in uniprocessor environment

ABSTRACT

This research has focused on the proposed and the development of an event based discrete event simulator for the existing General Utility Scheduling (GUS) to facilitate the reuse of the algorithm under a common simulation environment. GUS is one of the existing TUF/UA scheduling algorithms that consider the Time/Utility Function (TUF) of the executed tasks in its scheduling decision in a uniprocessor environment. The scheduling optimality criteria are based on maximizing accrued utility accumulated from execution of all tasks in the system. These criteria are named as Utility Accrual (UA). The TUF/ UA scheduling algorithms are design for adaptive real time system environment. The developed GUS simulator has derived the set of parameter, events, performance metrics and other unique TUF/UA scheduling element according to a detailed analysis of the base model.

Keyword: Time/utility function; Real time scheduling; Discrete event simulation; Uniprocessor