

Abstract

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On Collaborative Scheduling of Distributable Real-Time Threads in Dynamic, Networked Embedded Systems

Some emerging networked embedded real-time applications have relatively long reaction time magnitudes—e.g., milliseconds to minutes. These longer execution time magnitudes allow opportunities for more computationally expensive scheduling algorithms than what is traditionally considered for device-level real-time control sub-systems. In this paper, we review recent research conducted on collaborative scheduling algorithms in such systems that are subject to dynamic behavior such as transient \cdot sustained resource overloads, arbitrary activity arrivals, \cdot arbitrary node failures \cdot message loss. We show that collaborative scheduling algorithms have an advantage over non-collaborative scheduling algorithms.