

Abstract

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Fast Scheduling of Distributable Real-Time Threads with Assured End-to-End Timeliness

We consider networked, embedded real-time systems that operate under run-time uncertainties on activity execution times, arrivals, node failures, message losses. We consider the distributable threads abstraction for programming and scheduling such systems, and present a thread scheduling algorithm called QBUA. We show that QBUA satisfies (end-to-end) thread time constraints in the presence of crash failures, message losses, has efficient message time complexities, lower overhead, superior timeliness properties than past thread scheduling algorithms. Our experimental studies validate our theoretical results, and illustrate the algorithm's effectiveness.