

Abstract

Sherif Fahmy

Scheduling Dependent Distributable Real-Time Threads in Dynamic Networked Embedded Systems

We consider scheduling distributable real-time threads with dependencies (e.g, due to synchronization) in partially synchronous systems in the presence of node failure. We present a distributed real-time scheduling algorithm called DQBUA. The algorithm uses quorum systems to coordinate nodes' activities when constructing a global schedule. DQBUA detects and resolves distributed deadlock in a timely manner; allows threads to access resources in order of their potential utility to the system. Our main contribution is handling resource dependencies using a distributed scheduling algorithm.