Bimonthly Talks

CYBER-PHYISICAL SYSTEMS SOCIETY OF IRAN

Summer 2023

Wednesday
Tir. 14 (Jul 5)
18:00 - 19:30

SPEAKER: Dr. Morteza Mohaqeqi (Uppsala University)

Schedulability Analysis of Adaptive Variable-Rate Tasks

ABSTRACT: This talk reviews real-time systems where task parameters, including release time and worst-case execution time, are variable, dependent on the dynamic behavior of a physical system. An efficient and precise timing analysis of such "adaptive variable-rate" tasks is presented using the Digraph Real-Time (DRT) task model. In order to specify the workload of the tasks, a method from optimal control theory is employed to faithfully calculate the respective minimum inter-release times. Then, a generalization of the approach for systems with more complex physical behavior will be discussed. The talk will be concluded by a tool demonstration which implements the respective timing analysis. Possible extensions of the work will also be explored.

BIOGRAPHY OF THE SPEAKER: Morteza Mohaqeqi received his B.S., M.S., and Ph.D. degrees in Software Engineering from University of Tehran, Iran, in 2008, 2010, and 2015, respectively. He subsequently joined the Embedded Systems Group at the Department of Information Technology, Uppsala University, as a postdoctoral researcher. He currently works in the same group as a researcher. He has also worked as an embedded software developer between 2017 and 2019. His research interests include real-time analysis and embedded software design.

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