Fall 2010 Seminar
Department of Computer Science
University of Houston

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Host: Dr. Albert Cheng

Title: An Efficient Power-Aware Scheduling Algorithm for
the Multiprocessor Platform

Abstract: Given a task set T, determining the number of processors leading to a feasible schedule for T is an important problem in the real-time embedded systems community. For periodic and independent task sets, the utilization rate represents a lower bound on the number of processors. A multiprocessor platform with fewer processors than the utilization rate of a given task set does not have a feasible schedule. To the best of our knowledge, there is no estimation on the lower bound of the number of processors for a single-instance task set.
The contribution of this talk is three-fold. First, given a single-instance, non-preemptive and independent task set, we provide a lower bound on the number of processors such that there exists no feasible schedules on a multiprocessor platform with fewer processors than this lower bound. Second, we provide an efficient algorithm that finds a feasible schedule of a single-instance non-preemptive and independent task set on a multiprocessor platform having the number of processors equal to the lower bound. Third, for feasible task sets, we provide refinements of existing schedules into less energy-consuming schedules.

Bio: Stefan Andrei received the BSc and MSc degrees in computer science from Cuza University of Iasi, Romania, in 1994 and 1995, respectively, and the PhD degree in computer science from Hamburg University, Germany in 2000. He was a visiting Assistant Professor with National University of Singapore between 2002 and 2007. He is currently an Associate Professor with the Department of Computer Science, Lamar University, Texas, U.S.A. His research interests are in real-time embedded systems and software engineering. Stefan has been on the program committee for more than 30 international reputable conferences and member of Editorial Board of two international journals. He has given invited research seminars at several universities and private organizations. He has already published more than 70 peer-reviewed papers at international reputable journals and conferences and has more than 95 non-self citations. He was and is involved as a PI, co-PI, and member in more than 10 research projects. He is a member of the IEEE, the IEEE Computer Society, and the ACM. More details about Stefan are at his webpage: http://galaxy.lamar.edu/~sandrei/