Colloquium

Department of Computer Science

Dr. Neda Saeedloei

Neda Saeedloei is an assistant professor of Computer Science at University of Minnesota Duluth (UMD). After receiving a bachelor's degree in Applied Mathematics from Sharif University of Technology in 1998, she worked as a programmer for several years. She then went on to obtain a master's degree and a PhD in Computer Science from University of Texas at Dallas in 2007 and 2011, respectively. Before joining UMD in 2014, she worked as a post-doctoral researcher at INRIA, Rocquencourt and then at the Naval Research Laboratory. Her research is focused on formal methods for system design, and synthesis, specification and verification of cyber-physical systems (including real-timed systems and hybrid systems). She is also interested in models of computation and logic.

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Clock Allocation in Timed Automata and Graph Coloring

Abstract

We consider the problem of optimal clock allocation for a class of timed automata, TA_S, under the safe assumption that all states are reachable. Techniques similar to those used in the field of compiler construction allow us to construct an interference graph: the problem of clock allocation for timed automata in TA_S can be reduced to that of coloring this graph. We then identify a class of timed automata, $TA_{DS} \subsetneq TA_S$, for which optimal clock allocation can be computed in polynomial time, because the corresponding interference graphs are perfect. Finally, we discuss some of the difficulties in applying similar techniques to timed automata outside TA_S.