Distinguished Lecture Series

Keeping a Crowd Safe: On the Complexity of Parameterized Verification

Monday, March 2nd, 2015 10:00am
Auditorium 106 at New IIS Building

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Abstract

Many computer systems consist of an arbitrary large number of identical components---a "crowd"---communicating by some means. Examples include distributed algorithms, communication and network protocols, and computer models of biochemical systems. The safety problem for these systems consists of checking that *whatever the size of the crowd*, no individual can reach a dangerous state.

This amounts to checking safety of an infinite family of systems, containing one element for each crowd size.

In this talk we survey work on the complexity of the safety problem for different communication mechanisms, and on recent algorithmic developments. The results turn out to also shed some light on the problem of self-organization.

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