

COMPUTER SCIENCE COLLOQUIUM

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Formal Methods for Design and Verification

ABSTRACT

In this talk, I will address formal verification using model checking and two natural extensions thereof: repair of incorrect systems and synthesis of systems from their specifications. Model checking has gained importance as a largely automatic method to detect faults in hardware and software systems. However, fault localization and correction take as much time as fault detection and have received very little attention. I will show that these issues can be treated in a game-theoretic framework, both in theory and in practice. Finally, I will discuss an efficient method to automatically construct a correct systems from its specifications, rendering debugging unnecessary altogether.