

SEMINARIO CONJUNTO

MATEMÁTICAS DISCRETAS (DIM-CMM) & AGCO

Expositor

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Título

Fault-Tolerant Decentralized Runtime Monitoring

Abstract:

Runtime verification is aiming at extracting information from a running system, and using it to detect and possibly react to behaviors violating a given correctness property. Decentralized runtime verification involves a set of monitors observing the behavior of the underlying system. In this talk, the investigation of decentralized runtime verification in which not only the elements of the observed system, but also the monitors themselves are subject to failures will be presented. In this context, it is unavoidable that the unreliable monitors may have different views of the underlying system, and therefore may have different valuations of the correctness property. We characterize the number of valuations required for monitoring a given correctness property in a decentralized manner. Our lower bound is independent of the logic used for specifying the correctness property, as well as of the way the set of valuations returned by the monitors is globally interpreted. Moreover, our lower bound is tight in the sense that we design a distributed protocol enabling any given set of monitors to verify any given correctness property using as many different valuations as the one given by this lower bound.

Joint work with: Sergio Rajsbaum (UNAM, Mexico) and Corentin Travers (LaBRI, Bordeaux)

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