Professeur Javier Esparza de Technical University of Munich, Germany animera un

séminaire intitulé :

Black Ninjas in the Dark: Analyzing Population Protocols

Jeudi 16 février à 10h30
Grand Amphi, ENSIAS

Biographie : Javier Esparza holds the Chair for Foundations of Software Reliability and Theoretical Computer Science at the Technische Universität München since 2007. Previously, he held the Chair of Software Reliability and Security at the University of Stuttgart (2003-2007), the Chair of Theoretical Computer Science at the University of Edinburgh (2001-2003), and worked as an Associate Professor at the Technische Universität München (1994-2001). He has co-authored a book on the Free Choice Petri nets with Jörg Desel, as well as a book on the unfolding approach to the Model Checking with Keijo Heljanko. He has published over 200 scientific papers in the fields of automatic program verification, program analysis, concurrency theory, and automata theory. Javier Esparza has contributed to the Petri nets theory, and was one of the initiators of the unfolding approach to model checking, the automata-theoretic approach to software model checking, and the verification of infinite-state systems. More recently, he has conducted research on the fundamentals of program analysis and the verification of parametrized and stochastic systems. His group has developed several verification tools, including Moped and jMoped, Rabinizer, Strix, and Peregrine. Javier Esparza received an honorary doctorate in informatics from the Masaryk University of Brno in 2009, has been a member of Academia Europaea since 2011, and received an ERC Advanced Grant in 2018.

Abstract: Population protocols model systems consisting of many indistinguishable computing agents with tiny computational resources, like sensor networks or a "soup'" of chemical molecules. Population protocols pose many fundamental questions about distributed systems: What can be computed by anonymous agents, and how fast? Does the existence of a leader agent make a difference?

In the talk, I will introduce the population protocol model with the help of examples. More precisely, I will present the problem of the Black Ninjas in the Dark. I will also show animated simulations of some protocols.