

Colloquium d'Informatique de l'UPMC Sorbonne Universités

Fluidization of discrete event models or a marriage between the discrete and the continuous

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Formal discrete event, hybrid and continuous representations of systems provide "views" of their structure and behaviour in potentially many fields of application. In information technology, discrete event models are frequently "adequate" from a descriptive point of view, but the so called "state explosion problem" may eventually make their consideration not very practical.

Technically speaking, the fluidization of a discrete event model can be viewed as a (partial) relaxation of its state "from the integers into the reals". From a more conceptual perspective, it can be viewed as a change of the point of view "from the individuals to populations". The goal of such kind of relaxation or change of the point of view may be to reduce the computational complexity of the algorithms for certain analysis and synthesis problems, eventually to make decidable some properties.

Taking Petri Nets as a well-known and expressive family of formalisms for discrete event "views", the presentation will introduce the fluidization and focus on new analysis and synthesis possibilities, as much as on the price paid for that.

Manuel Silva received the Industrial-Chemical Engineering degree from the University of Sevilla (1974) and the Ph.D. degree from the INP de Grenoble (1978). From 1975 to 1978, he worked for the CNRS at the Laboratoire d'Automatique de Grenoble. In 1978 he started the group of Systems Engineering and Computer Science at the University of Zaragoza, where he has been dean of the School of Engineering (1986-1992).

Prof. Silva has been distinguished with a medal from the city of Lille (France) and by the Association of Telecommunication Engineers of Aragón. He is Honoris Causa Doctorate by the University of Reims-Champagne-Ardennes, member of the Royal Academy of Engineering of Spain, and member of the Royal Academy of Sciences of Zaragoza.

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