

招待講演

How Does Nondeterminism Occur in Complex Systems and What Can We Do About It?

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The distributed processing and communication systems exhibit very complex behaviors, where the same inputs may create different runs in a system yielding different results, some of which can be unintended. This phenomenon is called nondeterminism, it can lead to quality of service or/and safety issues. It is considered to be a good design practice to build systems that do not exhibit nondeterminism and always behave deterministically. However, it is very difficult to completely avoid nondeterminism in the design phase and even more challenging to detect it in the testing phase. In this talk, we provide a systematic analysis of a variety of sources of nondeterminism and point to some approaches dealing with it. The understanding of what can potentially cause nondeterminism is important for developing high quality systems with predictable behaviors.



Professor **Alexandre Petrenko** is a lead researcher of Computer Research Institute of Montreal, CRIM, Canada, since 1996. Between 1992 and 1996, he was a visiting professor at Université de Montréal. Until 1992, he was the director of the department of research in computer networks of the Institute of Electronics and Computer Science in Riga, URSS. Between 1979 and 1982, he worked in Computer Network Task Force of the International Institute for Applied Systems Analysis, IIASA, in Austria.

He was a visiting professor/researcher at the following centers: L'École Centrale Paris, France Télécom R&D, Lannion, Université de Rennes, and École Normale Supérieure de Cachan in Rennes, Université Joseph Fourier in Grenoble, SAP Sophia Antipolis in France; Siemens CT in Munich, Germany; Politecnico di Milano and Università di Catania in Italy; Osaka University in Japan, and Sao Paulo University in Sao Carlos, Brazil.

Professor Alexandre Petrenko has published more than 200 research papers and has given numerous invited talks. He received the Best Paper Award of the following conferences: the IFIP FORTE/PSTV Conference, 1999; the 17th IFIP International Conference on Testing of Communicating Systems, 2005; the IEEE Fifth International Conference on Software Testing, Verification and Validation, 2012.

He led numerous industrial research projects in collaboration with companies, such as Siemens, FranceTelecom, SAP, Ericsson, CAE, Bombardier, and GM.