Top4
Abstract Interpretation

Tuesday 24 August 2004

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Abstract Interpretation is a theory of approximation of mathematical structures, in particular those involved in the semantic models of computer systems. Abstract interpretation can be applied to the systematic construction of methods and effective algorithms to approximate undecidable or very complex problems in computer science such that the semantics, the proof, the static analysis, the verification, the safety and the security of software or hardware computer systems. In particular, the *static analysis by abstract interpretation,* which automatically infers dynamic properties of computer systems, has been very successful these last years to automatically verify complex properties of real-time, safety critical, embedded systems.

The topical day is a vertical presentation of abstract interpretation from theory to practice, including an informal introduction to abstract interpretation, the presentation of static analysis tools and the assessment of their use in an industrial context at Airbus France.

10h30 – 12h
Session 1: Foundations
Chair : Famantanantsoa RANDIMBIVOLOLONA (Airbus France, Toulouse)

Basic concepts of abstract interpretation – Patrick COUSOT (École Normale Supérieure, Paris, France)

13h30 – 15h
Session 2: Tools
Chair: Radhia COUSOT (École Polytechnique, Palaiseau, France)

TVLA : A system for generating abstract interpreters – Mooly SAGIV (Te-Aviv U., Israel)

AiT: worst case execution time – Christian FERDINAND (AbsInt GmbH, Saarbruecken, Germany)

15h30 – 17h
Session 3: Tools & experience

Chair: Radhia COUSOT (École Polytechnique, Palaiseau, France)

Astrée: verification of absence of run-time errors – Laurent MAUBORGNE (École Normale Supérieure, Paris, France)

Experience with the industrial use of abstract interpretation-based static analysis tools – Jean SOUYRIS (Airbus France, Toulouse)