

School on Tool-based Rigorous Engineering of Software Systems

The International School on Tool-based Rigorous Engineering of Software Systems (STRESS) series aims to provide top-quality lectures and innovative pedagogical material that provide young researchers with:

- instruction in existing and emerging formal methods and software engineering techniques that are tool-supported and process-oriented,
- insights into how software is developed in the real world, including emphasis on domains such as safety/mission-critical software and embedded systems where the development effort associated with tool-based formal methods promises greatest returns,
- case-studies and example domains in which formal methods have been successfully transitioned into actual development along with insights in how to bridge the gap between research tools and actual development processes, and
- additional pedagogical resources and personal contacts that they can explore for the purpose of increasing the impact of their research.

The theme of the 2014 International School is on **Software Specification, Verification, and Variation**. It features lecturers from academic and industry with significant experience in software contract, software analysis and certification, and software product lines. Lectures will emphasize the use of program analyzers and verifiers, model-driven development and software architecture tools, and industry-relevant challenge problems.

Lectures

- **Introduction to Verification with Spark 2014** Yannick Moy
This lecture will provide a broad overview of the SPARK 2014 language: the subset of Ada 2012 which it includes and the additional constructs which it adds to support verification.
- **Bakar Kiasan – A Certifying Program Verifier for High-Integrity Systems** Robby, John Hatcliff
The lecture will present foundations of symbolic execution, discuss how evidence can be generated from symbolic execution-based analysis, and will provide hands-on exercises using Bakar Kiasan to verify Spark 2014 program units.
- **SCCE: Variability and Evolution through Integrated Domain, Data and Process Modeling**
Bernhard Steffen, Tiziana Margaria
The lecture will illustrate the generator-driven approach along concrete hands-on exercises with the jABC, Cinco, and DyWA frameworks comprising the development of process-oriented web applications and domain-specific graphical modeling tools.
- **SMT-LIB and Kind** Cesare Tinelli
The lecture will start with an overview of SMT and its applications, followed by exercises using SMT solvers supporting the SMT-LIB input format. In a second part it will give a brief overview of model checking techniques relying on SMT solvers, and show how to use the Kind checker to prove invariant properties of transition systems.

Organisation

October 3 - 7, 2014

Corfu, Greece

associated with ISoLA 2014

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Programm Committee:

John Hatcliff, Kansas State University

Tiziana Margaria, University of Potsdam

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<http://santos.cis.ksu.edu/STRESS/2014>