Challenges and Opportunities in Analytic System Integration

Model fidelity and simulator correctness

- We cannot model everything early.

- How capable are we to detect problems early?

- How reliable are virtual platforms compared to the real system?

- How do we measure the effectiveness of detecting defects?

- How can we verify the correctness of simulators?

Challenges and Opportunities in Analytic System Integration

Model integration for system integration

- How should interfaces be designed?
- How can heterogeneous models be integrated (for simulation, synthesis, verification etc)
- How do we integrate and interface in the boundary of the cyber and physical worlds.
- How do we handle model consistency?
- How can we learn from theory of program language semantics?
- How can domain specific languages (DSLs) be used with model integration?
- What are the challenges for hardware-in-the-loop (HIL) simulation?
- What can we learn/use from the software engineering community ('continuous integration')

Challenges and Opportunities in Analytic System Integration

Test beds/challenge problems with metrics

- What are some affordable and realistic (read: concrete) challenge problems for AVI?

- How to measure the efficiency of an AVI approach (vs. conventional techniques)?

- What are some affordable and realistic physical testbeds for evaluating AVI techniques?