UCSB COMPUTER SCIENCE PRESENTS:

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Speaker: Peter Fritzson

High Level Modeling and Parallel/GRID Computing with OpenModelica

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Modelica is a general declarative equation-based object-oriented language for continuous and discrete-event modeling of physical systems for the purpose of efficient simulation. The language unifies and generalizes previous object-oriented modeling languages. The Modelica modeling language and technology is being warmly received by the world community in modeling and simulation. It is bringing about a revolution in this area, based on its ease of use, visual design of models with combination of lego-like predefined model building blocks, its ability to define model libraries with re-usable components and its support for modeling and simulation of complex applications involving parts from several application domains.

In this talk we present the Modelica language and its open-source OpenModelica environment including compiler, Eclipse plugin, and an electronic notebook system with the DrModelica self-instructing course material. We also present methods and OpenModelica tooling for automatic extraction of fine-grained parallelism from high-level equation-based models as well as manually specifying coarse-grained parallelism and algorithmic parallelism. Especially the fine-grained parallelism we believe fits well with the coming multi-core architectures. Some measurements from parallel execution are presented and a demo of OpenModelica is given.

(www.ida.liu.se/~pelab <http://www.ida.liu.se/%7Epelab>,
www.ida.liu.se/projects/OpenModelica
<http://www.ida.liu.se/projects/OpenModelica>)