

MAE Seminar Series

Emerging trends and new techniques for engineering modeling and simulation



Dr. Tom Lee

Chief Evangelist, Maplesoft

Abstract

Several key industries including automotive and aerospace sectors are questioning the viability of the traditional engineering modeling and simulation tool-chain for emerging design challenges. Many are concluding that meeting these challenges require a rethinking of how we create and interact with engineering models. This seminar presents a case for a new approach that exploits some of the well-known advantages of symbolic computation in a way that accelerates the development of complex dynamic models and produces models of higher fidelity and real time performance.

The software context for this seminar will be the Maplesoft product line. Best known for its math product Maple, Maplesoft has recently emerged as a key player in the engineering modeling software with the release of the milestone product MapleSim, a new modeling environment for high performance, multi-domain modeling of physical systems. MapleSim supports the interactive, drag and drop approach to system modeling and allows for rapid development of a wide range of models. Furthermore, through the application of Maple's symbolic computation algorithms, MapleSim automatically generates and provides access to all of the model equations of the system allowing for deeper exploration and greater flexibility in parameter studies. These symbolic tools also simplify model equations increasing simulation speeds by as much as an order of magnitude over traditional signal-flow based simulations. This symbolic approach has already earned keen interest from automotive OEMs, and a broad range of academic engineering groups.

This seminar will provide an overview of the product MapleSim and its conceptual foundation. Several demonstration examples will illustrate its functionality and potential. An informal Q & A session will discuss implications in research and education.

Speaker Biography

As Chief Evangelist at Maplesoft, Tom Lee is the principal external spokesperson for the company. He holds a PhD in Mechanical Engineering (Automation and Control) from the University of Waterloo. He has been with Maplesoft since 1989.

**112 O'Brian Hall
Friday, April 10th 2009
3:30 pm – 4:30 pm**

Please contact Dr. Venkat Krovi (vkrovi@eng.buffalo.edu) for additional information