

Abstract: The talk focuses broadly on how Simulink platform from MathWorks provide a software solution to efficiently engineer math-models of complex dynamic control systems. The efficiency comes from providing a uniform platform for both control engineers and software engineers to build complex applications. At the core, this platform is built by unifying basic concepts in math, control theory and computer science. With 'simulation environment' at the core, Simulink integrates variety of formal analysis engines in the platform. They provide capabilities for automatic test generation, property proving, run-time error detection at model and code level. The talk will give a high level overview on how some of your familiar concepts in computer science domain such as software engineering and formal methods have been put together in building an industry level tool for analysis and design of complex embedded applications.

Bio: Dr. Manoj Gangadhar Dixit is working as a Principal Engineer and Development Manager at MathWorks. His primary area of focus is to build tools that are usable and scalable for formal analysis of Simulink based control designs. These tools integrate well-known concepts from the computer science domain, such as symbolic analysis and model checking. He completed his PhD from IIT Kharagpur in the broad area of analysis of temporal specifications. In the past, he has worked for Sasken and General Motors R&D, focusing broadly on the analysis and design of embedded systems.