GSAW 2004 Tutorial V:

Using Automated Planning and Scheduling Technology to Automate Spacecraft Operations

Length: Half day

Overview:
Automated planning & scheduling technology has shown considerable promise in automating space mission operations with benefits of: reduced operations effort, reduced turnaround time for operations, improved mission efficiency, improved mission reliability, and more flexible operations. This tutorial will focus on answering the following questions: What is automated planning & scheduling technology? How does it work? What are its limitations? Who has used it and what were their experiences? How will it change future mission operations and missions? How does onboard autonomy impact mission operations?

Instructors: Steve Chien, Ari Jonsson, and Russell Knight, Jet Propulsion Laboratory

Biographies:
Dr.Chien is a principal scientist at the Jet Propulsion Laboratory. In 1997, he received the NASA Exceptional Achievement Medal Achievement Medal for his work in research and development of planning and scheduling systems for NASA. He is the Team Lead for the ASPEN Planning System, which received Honorable Mention in the 1999 Software of the Year Competition and was a contributor to the Remote Agent System which was a co-winner in the same1999 competition. In 2000, he received the NASA Exceptional Service Medal for service and leadership in research and deployment of planning and scheduling systems for NASA. Dr. Chien has presented numerous tutorials on automated planning and scheduling and taught classes at the University of Southern California on Automated Planning and Scheduling and Integrated Agent Architectures, which received a teaching excellence award. Currently Dr. Chien is leading an effort to automate operations (both ground-based and onboard) for the EO-1 mission using automated planning & scheduling technology.

Dr. Ari Jonsson is a research scientist with RIACS/NASA Ames Research Center. He is one of the principal architects of the EUROPA planning system, which is currently being deployed to support operations of the Mars Exploration Rover(s) (MER). He holds a PhD. In Computer Science from Stanford University.

Mr. Russell Knight is a senior member of technical staff at the Jet Propulsion Laboratory. He is the software lead for the CASPER automated planning system which is being deployed onboard the Three Corner Sat and Earth Observer One missions. He holds a M.S. in Computer Science from the University of Maryland.

Description of Intended Students and Prerequisites:
Operations leads and operations staff.
End to end information systems leads, ground data systems leads, and staff.
Project managers, and flight software leads and team members.
Institutional personnel relating to ground operations automation.
Any elements of ground systems interested in automation.