How to Build Intelligent Interactive Agents Using Soar

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Soar has been under development for over two decades as an architecture for building intelligent systems and human behavior models. Recent research and development activity with Soar has emphasized building competent, autonomous agents that interact with realistic and complex simulated environments. This tutorial will teach some of the methods that we use to design and engineer such behavior models. Instead of focusing on strict cognitive modeling, this tutorial will discuss the complexities that autonomous behavior and real-time interaction impose on a model. It will not involve intensive programming of intelligent agents, but will concentrate on higher level issues of task analysis, knowledge representation, process-oriented modeling, and knowledge acquisition. Many of these activities are useful to learn even if one does not use Soar to implement models, but the tutorial will also demonstrate the ways that Soar approaches and informs (and sometimes exacerbates) these tasks. To this end, tutorial participants will study and tweak a variety of interactive behavior models, and learn techniques for representing knowledge and behavior in Soar. They will also gain experience with some of the new development tools that support Soar modeling. Tutorial participants do not need an extensive background in programming.

Presenters: Each of the presenters has research and industry experience building interactive intelligent agent systems. Many of these have been "believable" agents with large amounts of knowledge developed within Soar. Soar Technology, Inc., uses Soar and other software paradigms to create intelligent and usable software for a variety of defense applications. All of the presenters also have experience developing interactive models of human behavior for various purposes, such as improving intelligent agents, improving human-computer interaction, understanding learning in problem solving, and studying human error in interactive tasks.