

The Psychological Soar Tutorial

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This Psychological Soar Tutorial describes Soar from a psychological modeling perspective. It does this through a series of exercises designed to illustrate the basic ideas behind Soar as a unified theory of psychology. These exercises also illustrate what the details of Soar look like. After attending this tutorial participants should be able to read Soar papers more easily and understand whether Soar is an appropriate cognitive architecture for their modeling tasks.

Introduction

Soar (ai.eecs.umich.edu/soar/) is an example cognitive architecture. There are numerous people working with it to characterize human behavior and use it as an intelligent architecture. It intentionally suffers under several known constraints of human behavior, such that while memory access is rapid, learning facts is slow and must be deliberate.

Work with cognitive architectures have been often limited by training materials. The best way to learn in the past was to visit an existing site and serve a 2-18 month apprenticeship. In 1993 Young and Ritter prepared a 6 to 8 hour tutorial to teach participants about Soar at a precursor to this ICCM conference. Over the next several years they offered it five times at conferences and workshops (Ritter, Jones, & Young, 1996; Ritter & Young, 1994). In 1995 a grant supported moving the tutorial to the web. This is a shortened version of that tutorial containing the introduction and core materials that has been revised to use the latest Soar version.

Instruction method

The tutorial consists of a half-day session combining lectures and a series of hands-on exercises to illustrate core concepts and to provide an introduction to programming in Soar. The exercises can also serve as a backbone for a semester course. The tutorial materials are available online as well (acs.ist.psu.edu/nottingham/pst-ftp/).

People taking the tutorial at a workshop can quickly see what working with Soar would be like, but do not have time to complete the exercises. While this may seem somewhat odd, it works well in practice. Learners can see what the question is, what types of knowledge would be necessary, and what the answers should be like.

This approach allows a more complete story to be presented in limited time.

Who should attend?

You should attend if you have only read about Soar and are interested in knowing how Soar works on a deeper level. If you are preparing a course on cognitive modeling or cognitive architectures you may find the introduction to the tutorial materials helpful (but this is not necessary to use them). Finally, if you were actively looking for a modeling architecture you would find the tutorial quite interesting.

Previous presentations

This tutorial has been offered three times at the University of Nottingham as part of an advanced class, eleven times at conferences (including ICCM 1 and 2), and once as university staff development. The materials have been used at other universities for formal classes (Scotland, Japan, Australia, and Bulgaria) and for informal study (e.g., Brazil, Australia). This and associated work is mentioned as an important part of the Soar enterprise by the (US) National Research Council (Pew & Mavor, 1998, p. 341).

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References

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