AD-A279 573

Advanced Computing Systems: Usability of Knowledge-Based Planning Systems Status Report

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MAY 24 1994
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1 July to 30 September 1993

Carnegie Mellon University
Department of Computer Science

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94-15556

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The objective of this research is to assess the value of different usability methods to designing a system as complex as a programming environment for a knowledge-based architecture that learns. As well as traditional empirical methods observing real users, analytic and heuristic methods to assess the usability of complex computer systems in advance of running prototypes are emerging from human-computer interaction (HCI) research. We will demonstrate the effectiveness of these observational, analytic and heuristic usability methods with respect to

- The classes of knowledge-based systems to which they can be applied.
- The types of usability problems they can, and cannot identify.
- The types of suggestions they can generate for the design of improved knowledge-based systems and the relative value of those suggestions for overall usability of the systems.
- The expertise of the evaluators necessary to apply the methods
- The effort involved in applying the methods.

1 Assessing usability methods

Accomplishments (July-September):

- We began work on an programming environment for Soar, a learning knowledge-based production system language. We chose to base our environment on the Genie architecture, shown effective for teaching procedural programming languages (e.g. Pascal, Object-Pascal). The resulting *SoarGenie* will be a flexible testbed for design ideas and a vehicle for assessing the value of usability methods. The Genie architecture provides a syntax- and semantics-directed editor, templates for common coding practices, auxiliary views of the code including browsing and graphical views, runtime support for programmer activities, and hooks to a multimedia authoring tool for creating program documentation and tutorials.

- The Macintosh version of Soar6 was made operational and is available via anonymous ftp. This version of Soar will be the underlying system for the SoarGenie.

Objectives (October-December)

- Bring on a post-doctoral researcher to apply an analytic or heuristic usability method and assess its usefulness for designing the SoarGenie.

- Collect empirical usability testing data for expert and novice Soar users in the current emacs-based programming environment to serve as a baseline against which the SoarGenie will be evaluated.

- Continue implementing the SoarGenie.

2 Major equipment arrivals

None.

3 Key personnel changes

Original personnel brought onto the project in this initial time period were Bonnie E. John (PI) and Vernon Harmon (SoarGenie programmer).

4 Noteworthy meetings

None.

5 Problem issues

None at this time.