AFAIK: A Help System for the Intelligent Room

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The Problem: As intelligent environments such as the AI Lab's Intelligent Room become more capable, they also become more complex to use. An Intelligent Help System called "As Far As I Know" (AFAIK)[2][3] addresses this issue by providing multimodal, autonomous, and interactive help.

Motivation: The Intelligent Room is a complex synergy of software agents, hardware devices, and human researchers. New features are added daily, which increases the capability and functionality of the Intelligent Room. Unfortunately, the improvements in capability and functionality come at a cost of increased complexity. For example, there are more than a half dozen ways of turning on the lights in the Intelligent Room. Therefore, there is a need to convey simple information about operating and interacting with Intelligent Room in a straightforward manner.

No individual researcher knows every feature of the Intelligent Room; knowledge is distributed over a dozen people in different research groups. These researchers can not staff the Intelligent Room 24 hours a day, 7 days a week, to answer questions. Therefore, there is a need to centralize the knowledge relating to the Intelligent Room, and autonomously deliver this knowledge.

Previous Work: AFAIK builds on the work of the Sally System[4]. Sally's approach was to start with an empty knowledge base and accumulate knowledge by learning information from users in the Intelligent Room. In addition, AFAIK is inspired by the work done in field of Intelligent Tutorial Systems, such as Dominie [1].

Approach: AFAIK differs from previous Intelligent Help Systems because the multimodal capabilities of the Intelligent Room enables AFAIK to interact with the user using multiple interfaces. AFAIK is designed to take advantage of the Intelligent Room's human-computer interaction capabilities, such as speech recognition. For example, a speech recognition system understands a command from a user in the Intelligent Room, while multiple projectors display images and help files to the user. The use of multiple modalities allows AFAIK to accommodate a wider range of users and situations than a system with a single modality [5]. In addition, there is evidence that combining information from multiple modalities results in a stronger neural reaction in the brain than the effects of a single modality [6].

Secondly, AFAIK offers interactive help, where information flows bidirectionally between the computer and the user. This interactive approach provides a better user experience than a static printed manual, where the flow of information is typically unidirectional. For example, AFAIK can show the user how to accomplish a task, and then the user can ask AFAIK to perform that task.

Future Work: The next step is to enable the Help System to proactively provide help to a user of the Intelligent Room, thus evolving it into an Intelligent Tutorial System. This new system can take cues from the sensors in the Intelligent Room, and act based on the context of the Room. For example, if a user shrugs his shoulders, the Help System can ask the user if he needs help.

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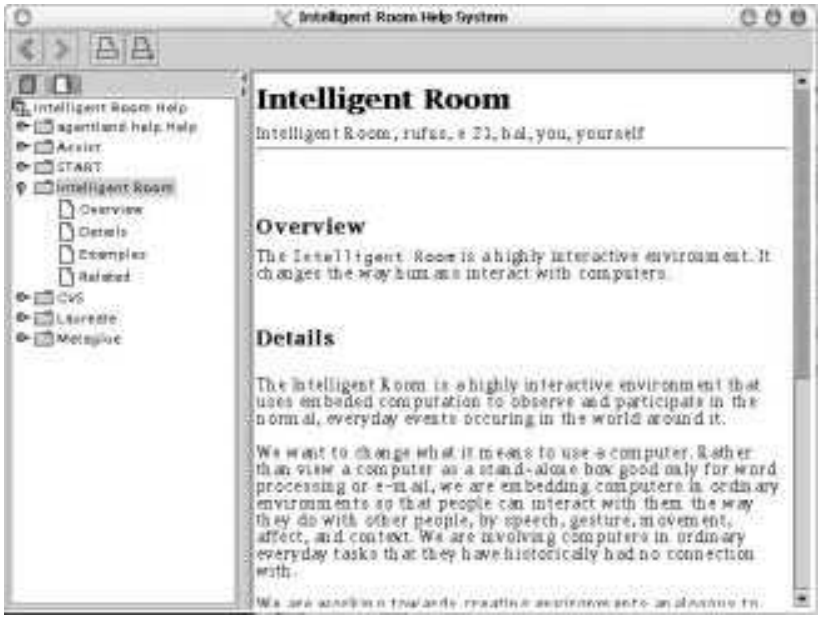

Figure 1: AFAIK's Graphical User Interface

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