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Week 6

Review of "DiamondHelp: A Graphical User Interface Framework for Human-Computer Collaboration"

A great and neat design! The whole history of operating systems emphasizes on usability instead of user interfaces. There are many conventions in the traditional interfaces, such as what should be under the file/edit/view/help menus, what should be the default directory structure, etc., the users are either institutionalized already or they will take a long time learning. The new approach views the whole process of problem solving as a single thread (or a few thread), and guides the users through via a dialog interface. It can also be extended to be as complex as the current operating systems interfaces.

This approach is similar to the interactive fiction (ref. http://www.ifarchive.org/), MUD/MOO approach.

Review of "Collaboration in Human-Robot Teams"

In this paper, Hoffman & Breazeal inspected and implemented the social and bi-lateral relationships between a human and their robot partner. The implementation is based on

o commitment on mutual belief (IV. E. 3 & II. B)

o mutual plan (IV. E. 1 & II A)

o commitment to their own actions and their partner's actions (IV. E. 2 & II. B)

o common ground (IV. E. 5.6. & II.C)

o common goal (IV. E. 4 & II. D)

In short, the human and his should partner should have common goal & common knowledge on how to attain the goal; they should act jointly; they should have good communication; they should cooperate the steps well (they trust, depend on, and support each other);

A short example of Leo + human partner used task manager to control the task learning/execution model and the task collaboration module, and demonstrated the success of the theory.

I like the stack based task collaborator. Leo is also very pretty.

Review of "Teamwork"

This paper brought forth the specifications of "teamwork", i.e., what is the (nearly) necessary and sufficient condition that a combination of individual works is called teamwork. The paper compared individual commitment/intention and joint commitment/intention and brought forth that common ground, commitment, and supporting are the components of teamwork.

In my point of view, the individual actions can also be used to find out level of cooperation among the agents, to predict the agents' next actions, and to facilitate robot learning. I have applied the EM algorithm for the influence model to robocup soccer simulator and found out that the structure of specific teams is quite stable in different tournaments against different teams.