Leslie Pack Kaelbling

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Project Overview

- Household robots will have to be able to operate in complex environments, full of many different kinds of objects
- Current learning and efficient planning algorithms cannot represent objects and their properties and relations
- We are developing new learning and planning algorithms that will allow real robots to learn and use important common-sense facts like “If ***a*** is on ***b*** and I pick up ***b***, then ***a*** will move too.”

Progress Through June 2001

- Modified Utree and G algorithms to improve effectiveness and efficiency
- Tested Utree, G, and Neurodynamic programming algorithms in simple blocks world domain with deictic and traditional representations
- Found that none of the methods worked very well
- Performed extensive experimentation do understand why
- Wrote technical report describing results; will submit to international conference

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Research Plan for the Next Six Months

- Invent new algorithms for learning domain models with deictic representations
- Use learned models to build state estimators
- Perform reinforcement learning based on estimated state
- Investigate low-level learning to perform visual segmentation and to develop basic concepts that serve as a foundation for model learning