NRI: FND: Coordinating and Incorporating Trust in Teams of Humans and Robots with Multi-Robot Reinforcement Learning

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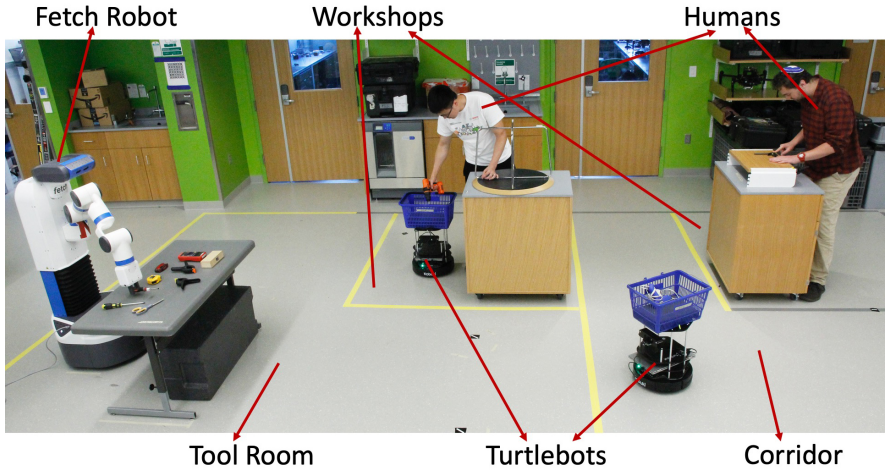
Challenge

- How can teams of robots learn to collaborate with humans given the uncertainty and vast differences in reasoning between robots and humans?



Solution

1. Teams of robots learning to assist humans even with incorrect and incomplete human models
   - Initial HRI POMDP models and then Bayesian deep reinforcement learning
2. … using shared mental models
   - For better communication and tight interaction
3. … incorporating trust
   - With human trust models and interpretability

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Scientific Impact

- Evaluate our methods in Minecraft search and rescue scenarios and then hardware
- New sample-efficient deep reinforcement learning methods, hierarchical RL methods, POMDP-based mental models, trust models

Broader Impact

- Approach is general enough to fit many multi-robot human interaction domains (e.g., manufacturing, healthcare, warehouse)
- Code and models will be open source
- Dedicated to diversity