Learning for Task and Motion Planning Workshop
-Report Back -
Organizers: Tucker Hermans and Oliver Kroemer

Workshop focused on combining learning with task and motion planning approaches
- TAMP focuses on long-horizon tasks and building on explicit knowledge with abstractions
- Learning uses more implicit knowledge and grounds skills+perception
- Seeing more interest in long-horizon learning and including foundation models
- Want to discuss the connections between these fields and supporting each other
- Format: presentations by George Konidaris, Jeannette Bohg, and Dylan Hadfield-Menell. Small group discussions and whole group summaries.

Much excitement about increasing use of learning in TAMP
Community sees benefits in using learning and TAMP together. Especially…
- Speeding up planning
- Scaling TAMP to novel objects and environments
- Grounding symbolic formulations for supporting task planning
- Incorporating natural language processing representations in planning

The combination of learning and TAMP may be a sliding scale.
- Need more discussion of not only strengths and weaknesses to increase awareness of different approaches, but how applicable in different domains
- Discussions tended to build around specific tasks or applications: food handling (apple picking and chicken processing) and cluttered pantries

Challenges and open questions to focus on:
- No shared paradigm for representation of state and action in learned TAMP components.
- How to best define goals for more complex environments
    - Implicit and explicit knowledge of different representations
    - Representing subgoals for long-horizon
- More need for better representations and handling of uncertainty
    - Capture uncertainty explicitly
    - Incorporating interactive feedback
- More interactions in TAMPs
    - Multi- robot TAMPs
    - More human-robot interaction
- Desire to bring the algorithmic guarantees from TAMP to hybrid TAMP+Learning