Self-Supervised Learning for Risk Aware Motion Planning

NRI: FND: Life-long Learning for Motion Planning by Robots in Human Populated Environments

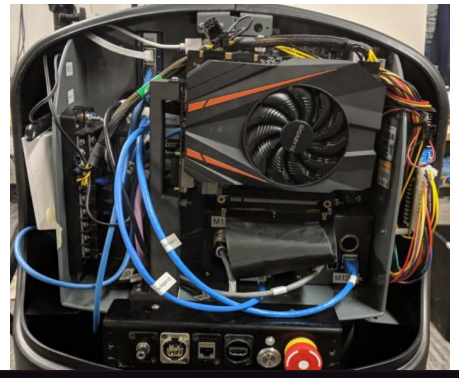
Award 1830686 / 8.18.2018 / Bradley Hayes & Christoffer Heckman University of Colorado Boulder

Challenge

- Risk-aware motion planning is essential for responsible deployment of autonomy.

Solution

- Self-supervised learning pipeline for recording (and predicting) human motion and navigation.
- Point-of-interest identification that generalizes across environments, from observation of human behavior.



Movo identifies and generalizes points of interest for path prediction through self-directed observation of human behavior

Scientific Impact

- Safer foundational planning capabilities enable long-term robot operation in human environments.

Broader Impact

- Establishing strategies for mitigating risk between humans and autonomous systems is a foundational step toward ubiquitous robots.
- Guide for upgrading Movo's compute now available!

OUTREACH

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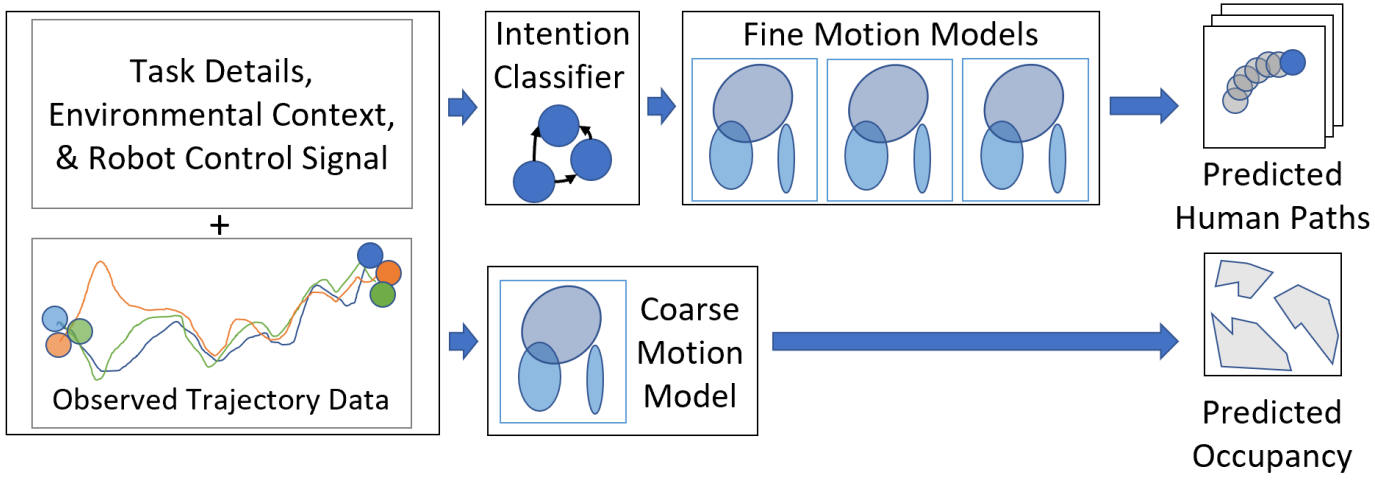

Develop informed priors for reasoning about others' situational awareness, potential motion, and potential collisions

Self-curate situations from experience as a basis for learning policies leading to real-time risk mitigation capabilities