FND: Mutually Aware Social Navigation

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tbd.ri.cmu.edu

Lead Students: Allan Wang (PhD, expected this summer) & Abhijat Biswas (MS, graduated)

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Challenge

1. Improve the way robots perceive and reason about human spatial behavior.
2. Develop navigation methods that lead to understandable and appropriate motion patterns in social environments.

Research Activities (final year)

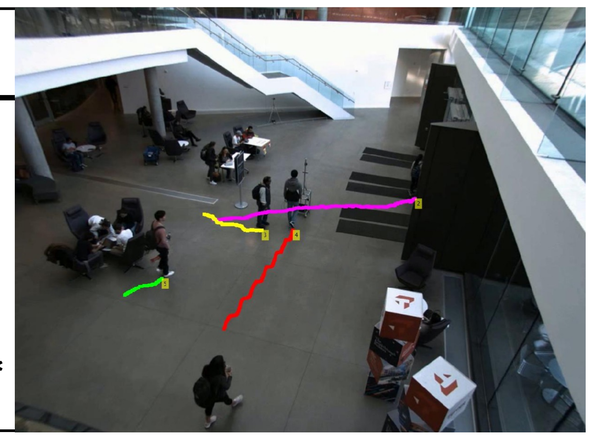
- Open dataset of robot-perspective, ground-truth position, public behavior dataset. This includes labels in metric space. tbd.ri.cmu.edu/tbd-social-navigation-datasets
  - Additional data collected, now labeling.
  - Set 2: RGB-D, 3D lidar (VLP-16), IMU, odometry, etc.
- New web tool for semi-autonomous labeling.
- Large survey article on the core challenges of social robot navigation (ACM TO-HRI). doi.org/10.1145/3583741

Scientific Impact

Create human-aware navigation using methods that incorporate the social norms which govern human physical space into robot planning.

Provide data, software, and algorithms for other research teams and developers.

Metric	Set 1	Set 2
Sessions	8	33
Duration (hr:min)	2:13	10:26
Pedestrians	1,416	23,008*



Society

Identify appropriate and accepted robot motion behaviors in public settings.

Education & Outreach

Establish a sharable dataset and software pipelines for benchmarking.

Potential Impact

Accelerate system development through open-source technology and datasets.

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