



FND: Mutually Aware Social Navigation

Aaron Steinfeld, Robotics Institute, Carnegie Mellon University
www.cs.cmu.edu/~astein

Challenge

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

Scientific Impact

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

New Result: Awareness of Splits and Merges

Construct a volumetric representation of groups using time as a spatial dimension
 Utilize a modified C3D model
 Outperforms trajectory-based approaches
 Appears to generalize to robot perspective
 Wang & Steinfeld 2020 RA-L/ICRA

Build a Better Natural Pedestrian Dataset

Gathering robot-perspective, ground-truth position, public behavior dataset
 Open data and evaluation pipeline

Broader Impact

Education: A sharable dataset and software pipeline for benchmarking
Industry: Accelerate system development, open-source technology
Society: Appropriate and accepted robot behaviors in public settings

Lead Students: Allan Wang & Abhijat Biswas
Collaborator: Henny Admoni, Robotics Institute

