

Learning a Group-Aware Policy for Robot Navigation

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Abstract— Human-aware robot navigation promises a range of applications in which mobile robots bring versatile assistance to people in common human environments. While prior research has mostly focused on modeling pedestrians as independent, intentional individuals, people move in groups; consequently, it is imperative for mobile robots to respect human groups when navigating around people. This paper explores learning group-aware navigation policies based on dynamic group formation using deep reinforcement learning. Through simulation experiments, we show that group-aware policies, compared to baseline policies that neglect human groups, achieve greater robot navigation performance (e.g., fewer collisions), minimize violation of social norms and discomfort.

