

Predictive Person Following using MOnarCH Robots

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Mobile robots are often required to operate in areas that are also used by human beings. This is the case for the MOnarCH robots which are supposed to work in medical environments with staff members, patients, visitors, other robots, etc. In this kind of situation, we want the robots to have a socially compliant behavior to preserve people's comfort and to respect humans' implicit behavioral rules.

The aim of this project was to provide useful information about surrounding humans, for the robot to use in their trajectory planning. Most robots use basic sensors for obstacle avoidance, which then occurs only at relatively short distances, and it makes their trajectory jerky when encountering a moving obstacle, such as a person. The

disruption caused by almost colliding is less damaging than actual collision but still annoying for both the person and the robot.

One way to avoid that is to try and predict the human trajectory in advance in order to adapt the path chosen by the robot to be smooth and without collisions or unnecessary sudden changes.

This project studies a method to predict human motion intentionality in order to plan the trajectory of a MOnarCH robot accordingly. The method proposed in the present study is geometric-based and probability-based. The goal of this project is to provide a cost map using the map of the environment, depending on a person's position and orientation detected by the robot's sensors.