Assumptions

Figure 1. Wireless CF Card Hardware Platform

4) The robot is composed of a computer, with a laser and camera as peripherals. The robot relies solely on data obtained from sensor data. The robot relies solely on data obtained from sensor data. The robot relies solely on data obtained from sensor data. The robot relies solely on data obtained from sensor data.

3) Exploration is interrupted upon survivor recognition. If three colors stacked vertically with a unique permutation are identified by the camera, the robot switches into rescue mode and proceeds to visit and rescue.

2) Curiosity Inspired Behavior Modeling

1) Reactive Potential Field Strategy

Curiosity Level 1: Robot has a preference for large open space or farthest wall. Robot switches to Level 2 if a period of time elapses.

Curiosity Level 2: Robot has a preference for spaces identified as available to allow movement forward. Due to the Potential Field Strategy, the controller enough time to execute a turn to avoid the obstacle. In case a), the robot will rotate until the laser reports a clear path. Once the laser reports a clear path, the robot will proceed to exploration mode. In case b), the robot will rotate until the laser reports a clear path. Once the laser reports a clear path, the robot will proceed to exploration mode.

How We Explore

How We Recognize Survivors

Survivors are represented by cylinders with three distinct colors. If more than one configuration of three vertical blobs are detected simultaneously, we group these by their x-coordinate to identify multiple survivors, then proceed towards the closest first.

How We Depart Survivors

The visit is signaled by listing the arrangement of the colors as well as by an acoustic signal akin to calling for help in a real world scenario.

The robot then reverts to exploration mode and continues searching for survivors. The robot will rotate until the laser reports a clear path.

Once the laser reports a clear path, the robot will proceed to exploration mode. In case a), the robot will rotate until the laser reports a clear path. Once the laser reports a clear path, the robot will proceed to exploration mode.

Strategy

1. Reactive Potential Field Strategy
2. Proportional Control for Angular Movement
3. Curiosity Inspired Behavior Modeling

Figure 2. Photograph of our hardware configuration.

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Literature cited


