

Corner Escape

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Problem

A narrow (1 to 2 ft) passage with several turns must be navigated by a robot with only two touch sensors, reaching a dead end and returning to the opening of the passageway without reversing direction other than turning from the dead end.

Method

The robot drives forward until one of the touch sensors is activated. For the first 4 touch sensor hits in under 5.204 seconds, the robot backs up for 402 ms makes a short turn for 101 ms in the direction opposite to the sensor's side. If there have been 5 sensor hits within 1.301 seconds of each other, the fifth touch makes the robot turn between 201.7 ms and 451.5 ms in the opposite direction.

Results

Our robot successfully escaped the passage without reversing direction in about 30 seconds. In our other tests, it exhibited similar behavior.