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PS2

The "dist_alarm.cpp" and "reactive_publisher.cpp" scripts provided in the package are adapted from the provided scripts.

The lidar alarm is set up with a range of pings instead of a single ping. Currently, the range of laser pings from (-pi / 2) to (pi / 2) are in use using the associated global variable. With this cone of pings, the pings are checked to find the minimum distance an obstacle is from the robot. While this distance is published, it is also used against the minimum safe distance to see if the other published value - a boolean signifying an alarm - should be raised to alert the controller of an obstacle nearby.

The controller itself, the reactive publisher, keeps the robot in operation under an open loop of the following operations: First, while there is no alarm raised for an obstacle, move forward. When the alarm is raised, stop moving forward and turn either left or right (randomly chosen) until the alarm is cleared.

The only issue encountered with this approach is the annoyance the random turning creates. While it enables the robot to explore the whole maze, it will do so out of sheer luck, and for the most part instead undos its actions with unfortunate random turns. A possible improvement is to choose turning directions randomly still, but to "commit" to this direction for some random number of future turns until it can choose a new direction again.