General forward-motion obstacle avoidance algorithm

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This document provides a pseudo-code description of a general obstacle avoidance algorithm.

1 Specification

The input to the algorithm is the desired translation in the starting forward direction. The algorithm generates moves that result in translation by the desired amount in the starting direction, as well as an unspecified translation in the directions perpendicular to the starting direction (in the presence of blocking obstacles).

2 Algorithm

```
input:
    desiredDistance
init:
    currentDistance := 0

while( currentDistance < desiredDistance )
    while( blocked )
        turn +90 degrees
    end

    translate by 1 unit

    if( direction == starting direction )
        increment currentDistance
    end

    if( direction == opposite of starting direction )
        decrement currentDistance
    end

    if( direction != starting direction )
        turn -90 degrees
        if( blocked )
            turn +90 degrees
        end
    end
end
```