

<p>Online Motion Planning Problem Set 4 Universität Bonn, Institut für Informatik I</p>
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*To be solved until the 22nd of November*

**Problem 1:**

- a) Create an environment in which BUG1 finds a shorter path from start to target than BUG2.
- b) Create an environment in which BUG2 finds a shorter path from start to target than BUG1.
- c) Find and prove a lower bound for the worst-case performance of BUG2 depending on  $|st|$ , and the  $U_i$  and  $n_i$  of the obstacles  $P_i$ .

**Problem 2:**

Consider the following BUG variant. The robot follows the BUG2 strategy, but does not leave the obstacle right at the point where it hits the segment  $\overline{st}$ . Instead he leaves the obstacle (if possible) at the next obstacle vertex after this position.

Prove or disprove: In every environment this strategy leads the robot to the target.