• You can hand in your written solutions until Tuesday, 27.06., 14:15, postbox in front of room E.01 LBH.

Exercise 25: Simple Street Strategy (4 points)
Let us assume that for the current vertices $v_r$ and $v_l$ the agent use the precise bisecting angle of the opening angle until either $v_r$ or $v_l$ changes.

Analyse the Bisecting-Angle-Strategy for a triangle where $v_r$ and $v_l$ do not change. Find the worst-case ratio!

Figure 1: Moving along the bisecting angle!
Exercise 26: Steet strategy for small angles (4 points)

In the lecture we presented an optimal path for the street searching problem for opening angles $0 \leq \varphi_0 \leq \pi/2$ by setting $\sqrt{2}(\ell_1 - \ell_2) = \sqrt{2}(r_1 - r_2)$. The reason was that we would like to guarantee $w \leq \min\{ \sqrt{2}(\ell_1 - \ell_2), \sqrt{2}(r_1 - r_2) \}$.

1. Explain the idea of the above requirement for small angles. Show that the change of reflex vertices is not a problem in the backward analysis of this case.

2. The corresponding curve is a hyperbola, present its parameter form for given starting values $l$ and $r$, similar to the large angle case handled in the lecture.

Exercise 27: Combine strategy parts (4 points)

Present a formal argumentation that the application of the WCA-strategy for a sequence of funnel situations achieves a competitive ratio of $\sqrt{2}$. 