1 Aufabe 1

Parking Maneuver unchanged
Drive Control with calibrated angles
In drive_control.py we calibrated the angles of the simple drive control node from
15: angle_left = 30 to angle_left = 50
17: angle_right = 150 to angle_right = 170
for the parking maneuver to work properly.

The video can also be found in our github

2 Aufgabe 2

$$ {}^{B}_{A}T = \begin{pmatrix} cos90° & -sin90° & 0 & t_x \\ sin90° & cos90° & 0 & t_y \\ 0 & 0 & 1 & t_z \\ 0 & 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 0 & -1 & 0 & -1 \\ 1 & 0 & 0 & 4 \\ 0 & 0 & 1 & 5 \\ 0 & 0 & 0 & 1 \end{pmatrix} $$

3 Aufgabe 3

- $$ \epsilon = \begin{pmatrix} cos(\frac{-3\pi}{2}) \\ 0 * sin(\frac{-3\pi}{2}) \\ 0 * sin(\frac{-3\pi}{2}) \\ 1 * sin(\frac{-3\pi}{2}) \end{pmatrix} = \begin{pmatrix} cos(-270°) \\ 0 * sin(-270°) \\ 0 * sin(-270°) \\ 1 * sin(-270°) \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ -1 \end{pmatrix} $$
  $$ R = \begin{bmatrix} 1-2 & 2*(0-0) & 2*(0+0) \\ 2*(0+0) & 1-0-2 & 2*(0-0) \\ 2*(0-0) & 2*(0+0) & 1-0-0 \end{bmatrix} = \begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix} $$
  $$ R * v = \begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix} * \begin{pmatrix} 2 \\ 0 \\ 0 \end{pmatrix} = \begin{pmatrix} -2 \\ 0 \\ 0 \end{pmatrix} $$
- $$ \epsilon = \begin{pmatrix} 0{,}5 \\ -0{,}5 \\ -0{,}5 \\ 0{,}5 \end{pmatrix} $$
  $$ R = \begin{bmatrix} 1-0{,}5-0{,}5 & 2*(0{,}25-0{,}25) & 2*(-0{,}25-0{,}25) \\ 2*(0{,}25+0{,}25) & 1-0{,}5-0{,}5 & 2*(-0{,}25+0{,}25) \\ 2*(-0{,}25+0{,}25) & 2*(-0{,}25-0{,}25) & 1-0{,}5-0{,}5 \end{bmatrix} = \begin{bmatrix} 0 & 0 & -1 \\ 1 & 0 & 0 \\ 0 & -1 & 0 \end{bmatrix} $$
  $$ X = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} Y = \begin{pmatrix} 0 \\ 0 \\ -1 \end{pmatrix} Z = \begin{pmatrix} -1 \\ 0 \\ 0 \end{pmatrix} $$
  $$ \epsilon_0 = cos(\tfrac{\Theta}{2}) \rightarrow \Theta = 120° $$

4 Aufgabe 4

Since z must be orthogonal to y and x the vector z = (0, 0, sqrt(0.5)).