1

We have $d = 0.4$ (m) is distance between wheels, $r = 0.1$ (m) is radius of wheels. ω_l and ω_r are rotation speed of left and right wheel.

$$
\begin{aligned}
u_1 &= \omega_l \\
u_2 &= \omega_r \\
x_1 &= 0.05 * (u_1 + u_2) * cos(0.25 * (u_2 - u_1)) \\
x_2 &= 0.05 * (u_1 + u_2) * sin(0.25 * (u_2 - u_1)) \\
x_3 &= 0.25 * (u_2 - u_1)
\end{aligned}
$$

$$
\begin{pmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{pmatrix} = \begin{pmatrix} 0.05 * (\omega_r + \omega_l) * cos(0.25 * (\omega_r - \omega_l)) \\ 0.05 * (\omega_r + \omega_l) * sin(0.25 * (\omega_r - \omega_l)) \\ 0.25 * (\omega_r - \omega_l) \end{pmatrix}
$$

2

To play rosbag run
$ ros2 bag play path/to/rosbag