List of Vars

Pg = position of the goal. added a box around it using rg.

Po = position of the obstacles

X1 = the first two columns are position of robot, third column is the yaw or heading of the robot (in radians I think)

X\_L = position of leader, third column is the yaw or heading of the leader (in radians I think)

Adaptive\_gains = These are used to control the haptic feedback. Basically, they increase as the error between the robot and leader increases.

dX1 = velocity of the robot [x, y, yaw]

Force\_input = the amount of force the user was putting on the machine

Order = map/condition order

r = the x y z (position) and dx dy dz (velocity) of the joystick end point. Where the user is positioning the device.

Rg = size of the box around the goal, Pg

T = time

Vw1 = this is the linear and angular velocity of the robot. so not in the x y frame.