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from omni.isaac.core import SimulationContext

from omni.isaac.core.robots import Robot

from omni.isaac.core.utils.types import ArticulationAction

import numpy as np


# Initialize simulation context

simulation_context = SimulationContext()


# Number of robots in the swarm

num_robots = 10


# Define positions for each robot in the swarm

robot_positions = np.array([[i * 2, 0, 0] for i in range(num_robots)])


# List to hold robot instances

robot_swarm = []


# Loop to instantiate robots

for i, pos in enumerate(robot_positions):

    # Create a robot for the swarm (replace with your robot's USD path)

    robot = Robot(

        prim_path=f"/World/robot_{i}",

        usd_path="omniverse://localhost/NVIDIA/Assets/Robots/Franka/Franka.usd",

    )


# Set initial position for each robot
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robot.set_world_pose(pos)

# Add the robot to the simulation context and swarm list
robot_swarm.append(robot)

# Start the simulation
simulation_context.start()

# Simulation loop (control the robots here)
for _ in range(1000): # Example of 1000 simulation steps
    # You can apply commands to robots in the swarm here
    for i, robot in enumerate(robot_swarm):
        # Example: Move the robot arm with random actions
        action = ArticulationAction(
            joint_positions=np.random.uniform(-1, 1, robot.num_dof)
        )
        robot.apply_action(action)

# Step the simulation
simulation_context.step()

# Stop the simulation
simulation_context.stop()
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