Sphere System

Control System

Logitech Controller

entry/
- Initialize a Connection with a Controller

do/
- Get Values from 2 Joysticks of the controller
- Translate values to Target_Motor_Speed and Servo_angle

Pendulum Servo

entry/
- Initialize GPIO and PWM pins of RPi 5

do/
- Get servo_angle
- Write_angle(Servo_Angle)

Continuous Servo

entry/
- Initialize Smart Servo Driver

PID Control

do/
- Get Target_Motor_Speed and IMU data
- Calculate Pitch
- calculate Motor_Speed_PID using PID controller

Forward

do/
- Get Motor_Speed_PID
- Write_speed_forward (Motor_Speed_PID)

Idle

entry/
- Write_speed(0)

Backward

do/
- Get Motor_Speed_PID
- Write_speed_backward (Motor_speed_PID)

[Motor_speed_PID > 0]
[Motor_speed_PID = 0]
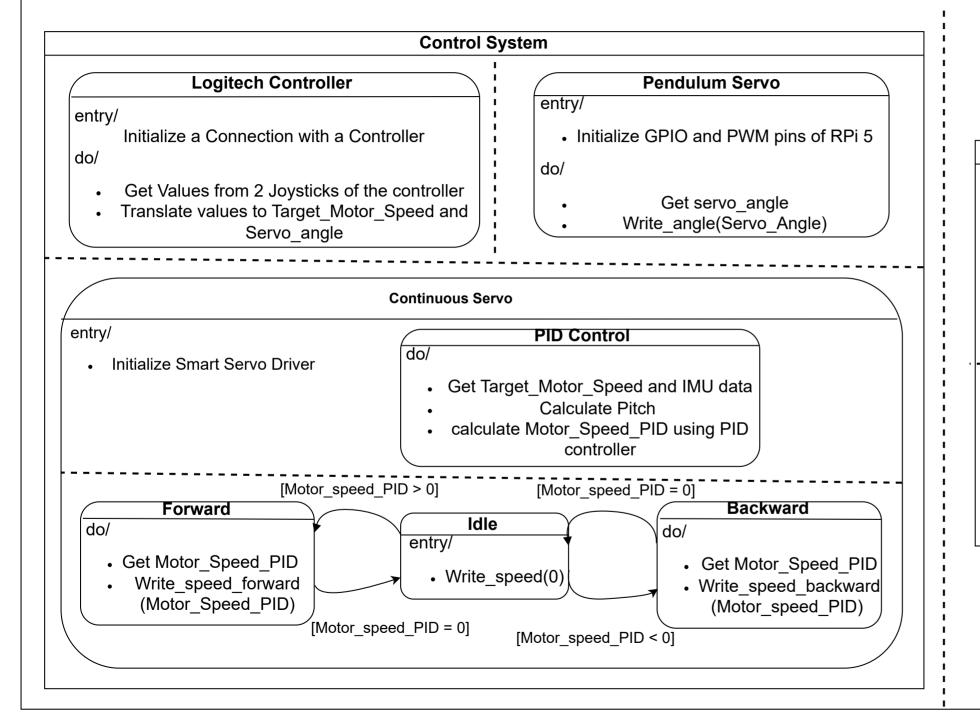[Motor_speed_PID = 0]
[Motor_speed_PID < 0]

Mapping System

Livox ROS2 Driver

entry/
- Initialize a Connection with Livox Mid 360

do/
- publish Points and internal IMU data

SLAM Algorithm

do/
- Get imu data and points
- Publish Cloud Registered Point Cloud data, Odomotory, path, pose, etc

ROS2 Bag

do/
- Record Published Topics from SLAM Algorithm and IMU