

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, Odomotory, path, pose, etc

ROS2 Bag

do/

- Record Published Topics from SLAM Algorithm and IMU