Sphere System

Control System Logitech Controller Pendulum Servo entry/ entry/ Initialize a Connection with a Controller • Initialize GPIO and PWM pins of RPi 5 do/ do/ Get Values from 2 Joysticks of the controller Get servo angle Translate values to Target_Motor_Speed and Write_angle(Servo_Angle) Servo Angle **Continuous Servo** entry/ PID Control do/ Initialize Smart Servo Driver Get Target Motor Speed and IMU data Calculate Pitch calculate Motor Speed PID using PID controller [Motor_speed_PID = 0] [Motor speed PID > 0] Backward **Forward** Idle do/ do/ entry/ Get Motor_Speed_PID • Get Motor Speed PID Write_speed(0) Write speed forward Write speed backward (Motor_Speed_PID) (Motor_speed_PID) [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