Class Diagram
Final Project Group 7

InspectCan (ROS Service)

Request:
+ rgb_image : sensor_msgs::Image

Response:
+ success : bool
+ nominal : bool
+ centroid_x : int
+ centroid_y : int

LocalizeCan (ROS Service)

Request:
+ point_cloud : sensor_msgs::PointCloud2
+ centroid_x : int
+ centroid_y : int

Response:
+ success : bool
+ transform_CDi : geometry_msgs::Transform

InspectionMetrics (ROS Message)

[No constants]

+ move_successful : bool
+ can_detection_successful : bool
+ can_nominal : bool
+ transform_WC_measured : geometry_msgs::Pose
+ transform_WDi_expected : geometry_msgs::Pose
+ transform_WDi_measured : geometry_msgs::Pose

InspectionController (ROS Node)

- nh : ros::NodeHandle
- arm_trajectory_result_sub : ros::Subscriber<control_msgs::FollowJointTrajectoryActionResult>
- move_base_cli : actionlib::SimpleActionClient<move_base_msgs::MoveBaseAction>
- inspect_can_cli : ros::ServiceClient<enpm808x_final_inspection_robot::InspectCan>
- localize_can_cli : ros::ServiceClient<enpm808x_final_inspection_robot::LocalizeCan>
- point_cloud_sub : ros::Subscriber<sensor_msgs::PointCloud2>
- rgb_image_sub : ros::Subscriber<sensor_msgs::Image>
- inspection_metrics_pub : ros::Subscriber<enpm808x_final_inspection_robot::InspectionMetrics>
- inspection_finished_pub : ros::Subscriber<std_msgs::Empty>
- home_position : geometry_msgs::Pose
- detection_pose_offset : tf::Transform
- detection_transform_0C : tf::StampedTransform
- expected_can_positions : std::queue<tf::Vector3>
- last_rgb_image : sensor_msgs::Image
- last_point_cloud : sensor_msgs::PointCloud2
- move_base_result_cb : actionlib::SimpleActionClient<move_base_msgs::MoveBaseAction>::SimpleDoneCallback
- arm_tucked : bool
- is_going_home : bool
- current_metrics : enpm808x_final_inspection_robot::InspectionMetrics

+ InspectionController(ros::NodeHandle*, geometry_msgs::Pose, tf::Transform)
+ ~InspectionController()
+ handleArmTrajectoryResult(const control_msgs::FollowJointTrajectoryActionResultConstPtr&) : void
+ handleMoveBaseResult(const actionlib::SimpleClientGoalState&, const move_base_msgs::MoveBaseResultConstPtr&) : void
+ handleRbgImageUpdate(const sensor_msgs::ImageConstPtr&) : void
+ handlePointCloudUpdate(const sensor_msgs::PointCloud2ConstPtr&) : void
+ inspect(const std::vector<tf::Vector3>&) : void
+ isArmTucked() : bool
- requestMoveBaseActionGoal(const geometry_msgs::Pose&) : void
- requestMoveBaseActionGoalFromCanPosition(const tf::Vector3&) : void
- finishPipelineIteration() : void

CanCharacterizer (ROS Node)

- nh : ros::NodeHandle
- inspect_can_srv : ros::ServiceServer<enpm808x_final_inspection_robot::InspectCan>
- localize_can_srv : ros::ServiceServer<enpm808x_final_inspection_robot::LocalizeCan>

+ CanCharacterizer()
+ ~CanCharacterizer()
+ handleInspectCanRequest(enpm808x_final_inspection_robot::InspectCanRequest&, enpm808x_final_inspection_robot::InspectCanResponse&) : bool
+ handleLocalizeCanRequest(enpm808x_final_inspection_robot::LocalizeCanRequest&, enpm808x_final_inspection_robot::LocalizeCanResponse&) : bool