GSML Calibration and Usage

This document outlines the calibration and usage of the GSML cameras for the Jetson Orin PC.

Files required available at:

github.com/stef-andonov/nUWAy-CITS3200

Dependencies

- rclpy
- sensor_msgs
- cv_bridge
- opencv-python
- numpy

Calibration

1. Pull GitHub repository using:

   git clone https://github.com/stef-andonov/nUWAy-CITS3200.git

2. Execute in the source directory:

   colcon build

3. After building, source the environment with:

   source install/setup.bash

4. Run first publisher node of camera with:

   ros2 run gsml gsml_publisher_1

5. Then, run subscriber to take pictures for calibration of the, use CTRL+C when enough pictures are taken. By default, ‘pictures’ is the directory created with the calibration images:

   ros2 run gsml gsml_subscriber

6. Finally, run calibration node to obtain calibration information as a text file.

   ros2 run gsml gsml_calibrate <calibration_images_folder>
   <chessboard_width – 1> <chessboard_height – 1> <square_size_mm>

Usage

1. After calibration there should be a text file called ‘camera_calibration_results.txt’. This contains the information to undistort the fisheye GSML camera. Run the publishers to publish the undistorted video frames as ROS topics in the form video_frames_<number>:

   ros2 run gsml gsml_publisher_1
   ros2 run gsml gsml_publisher_2
   ros2 run gsml gsml_publisher_3
   ros2 run gsml gsml_publisher_4

2. [Optional] To visualise, open rviz2 and select the Image for each ROS topic.