macOS Setup Guide – ROS 2 Image Pipeline

This document explains how to set up and run the ROS 2 Image Publisher–Subscriber project on **macOS**. The instructions are generic and focus on reliable execution rather than OS-specific tooling.

1. Prerequisites

Required: macOS (Intel or Apple Silicon) Python 3.9 or newer Internet connection Optional (recommended): ROS 2 Jazzy Jalisco installed system-wide

Official ROS 2 Jazzy installation instructions for macOS:
https://docs.ros.org/en/jazzy/Installation/macOS-Install-Binary.html

2. Install Python Dependencies

Ensure pip is available and install the required Python libraries:

```
python3 -m pip install --user rclpy opencv-python numpy
```

3. Project Setup

1. Download the provided project ZIP file.
2. Extract it to a directory of your choice (example below).

```
~/work/ros2_image_pipeline
```

4. Running the System

Open **two terminal windows** and navigate to the extracted project directory in both.

Terminal 1 – Publisher

```
source /opt/ros/jazzy/setup.bash # if ROS 2 is installed
cd ~/work/ros2_image_pipeline
export ROS_DOMAIN_ID=0
python3 publisher/image_publisher.py
```

Terminal 2 – Subscriber

```
source /opt/ros/jazzy/setup.bash # if ROS 2 is installed
cd ~/work/ros2_image_pipeline
export ROS_DOMAIN_ID=0
python3 subscriber/image_subscriber.py
```

5. Output

When running correctly, the system produces:

Saved images with timestamp overlay in `output/images/` Metadata file in `output/metadata.json`

Notes

No ROS workspace or colcon build is required. The project runs directly via Python scripts. If ROS 2 Jazzy is installed, it will be used automatically. If ROS 2 is not installed, Python-based execution is sufficient.