📷Raspberry Pi Camera Setup on Ubuntu 22.04 LTS (Pi 4)

This guide explains how to set up and use the Raspberry Pi Camera Module with **Ubuntu 22.04 LTS** on a Raspberry Pi 4 using **rpicam-apps**.

Hardware Setup

1. Connect the Raspberry Pi Camera Module to the **CSI port** on the Raspberry Pi 4.

System Preparation

Update and upgrade the system:

```
sudo apt update
sudo apt upgrade -y
```

Install general build tools:

```
sudo apt install -y git build-essential meson ninja-build pkg-config cmake
```

Install libraries required for **rpicam-apps**:

```
sudo apt install -y libboost-dev libdrm-dev libexif-dev libjpeg-dev libpng-dev
libtiff-dev
     libudev-dev libyaml-dev python3-yaml python3-pip libgstreamer1.0-dev
libgstreamer-plugins-base1.0-dev
     libevent-dev libepoxy-dev libglib2.0-dev python3-ply
```

Handling Missing Dependencies

If you encounter missing dependencies, install them as follows:

Install Meson

```
sudo apt update
sudo apt install -y python3-pip python3-setuptools python3-wheel ninja-build
pip3 install --user meson
```

Add Meson's install path to your `~/.bashrc`:

```
nano ~/.bashrc
```

Add this line at the end:

```
export PATH="$HOME/.local/bin:$PATH"
```

Then reload:

```
source ~/.bashrc
```

Fix ROS2 Keyring Issues

If you see configuration issues with **signed-by** options:

```
sudo curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/ros.key -
o /usr/share/keyrings/ros-archive-keyring.gpg
sudo chmod a+r /usr/share/keyrings/ros-archive-keyring.gpg
```

Build and Install rpicam-apps

Clone and build rpicam-apps (which uses libcamera internally but provides Pi-specific utilities):

```
cd ~
git clone https://github.com/raspberrypi/rpicam-apps.git
cd rpicam-apps

meson setup build --buildtype=release
   -Dpipelines=rpi/vc4,rpi/pisp
   -Dipas=rpi/vc4,rpi/pisp
   -Dv4l2=true
   -Dgstreamer=enabled
```

```
    -Dtest=false
    -Dlc-compliance=disabled
    -Ddocumentation=disabled
    -Dpycamera=enabled

ninja -C build
sudo ninja -C build install
```

🎥Testing the Camera

Use the `rpicam-apps` utilities to test the camera:

```
rpicam-hello
```

Other useful commands:

```
# Capture an image
rpicam-still -o test.jpg

# Record a video
rpicam-vid -t 10000 -o test.h264
```

If you see a preview window or valid output files, your camera is working correctly.

✅You now have the Raspberry Pi Camera fully working on Ubuntu 22.04 LTS with **rpicam-apps**.