Setup Guide

This document provides a complete setup workflow for deploying Luxonis/OAK hardware on NVIDIA Jetson platforms, installing ROS2 Humble, configuring MAVROS2 & PX4, running Gazebo simulations, and installing PyTorch/torchvision with Jetson-compatible CUDA support.

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1. PyTorch Installation (Jetson-Compatible Build)

Official Jetson wheels:
https://forums.developer.nvidia.com/t/pytorch-for-jetson/72048
Choose the version matching your JetPack.

Example installation:

Download wheel:

wget https://nvidia.box.com/shared/static/fjtbno0vpo676a25cgvuqc1wty0fkkg6.whl -O torch-1.10.0-cp36-cp36m-linux_aarch64.whl

Install dependencies:

sudo apt-get update

sudo apt-get install -y python3-pip libopenblas-base libopenmpi-dev libomp-dev

Fix Cython version:

pip3 install 'Cython<3'

Install NumPy:

pip3 install numpy

Install PyTorch:

pip3 install torch-1.10.0-cp36-cp36m-linux_aarch64.whl

2. Jetson Resource Monitoring

Use Tegrastats to view CPU, GPU, RAM usage:

sudo tegrastats

3. TorchVision Installation (Jetson Build)

Install required dependencies:

sudo apt-get install libjpeg-dev zlib1g-dev libpython3-dev libopenblas-dev libavcodec-dev libavformat-dev libswscale-dev

Clone compatible TorchVision:

git clone --branch v0.11.1 https://github.com/pytorch/vision torchvision

cd torchvision

export BUILD_VERSION=0.11.1

python3 setup.py install --user

cd ..

Install Pillow if needed:

pip install 'pillow<7'

4. CUDA, Benchmarks & Demos

CUDA GPU enable video:
https://www.youtube.com/watch?v=BCNnqTFi-Gs

OpenCV Zoo models & demos:
https://github.com/opencv/opencv_zoo

5. Deploying Luxonis (OAK) with NVIDIA Jetson

Follow the official Luxonis deployment guide for Jetson platforms:
https://docs.luxonis.com/hardware/platform/deploy/to-jetson

This includes instructions for:

- Installing DepthAI on Jetson
- Enabling hardware acceleration
- Running OAK-D demos on Jetson

6. ROS2 & MAVROS2 Installation (Jetson Ubuntu 20.04 / 22.04)

Step 01 — Install ROS2 Humble

Follow official installation instructions:
https://docs.ros.org/en/humble/Installation/Ubuntu-Install-Debs.html

After installation, **run:**

source /opt/ros/humble/setup.bash

Step 02 — Install MAVROS2

MAVROS2 supports ROS2 **Humble** and **Iron**.

Install MAVROS2 packages:

sudo apt install ros-humble-mavros ros-humble-mavros-extras -y

Install GeographicLib datasets (Required):

wget
https://raw.githubusercontent.com/mavlink/mavros/master/mavros/scripts/install_geographiclib_datasets.sh

chmod +x install_geographiclib_datasets.sh

sudo ./install_geographiclib_datasets.sh

Launch MAVROS2 with PX4 hardware:

ros2 launch mavros px4.launch fcu_url:=/dev/ttyACM0:115200

7. Install QGroundControl on Jetson (ARM64)

Install using Flatpak (recommended for Jetson):

Guide:
https://github.com/sidharthmohannair/Installing-QGroundControl-on-Ubuntu-ARM64-using-Flatpak

Run QGroundControl:

flatpak run --device=all org.mavlink.qgroundcontrol

8. PX4 + Gazebo (SITL) Simulation Setup

Launch MAVROS2 for SITL:

ros2 launch mavros px4.launch fcu_url:=udp://127.0.0.1:14540@

Launch Gazebo simulation:

cd ~/PX4-Autopilot

make px4_sitl gz_x500

This will spawn the X500 drone model in Gazebo using PX4 SITL.
