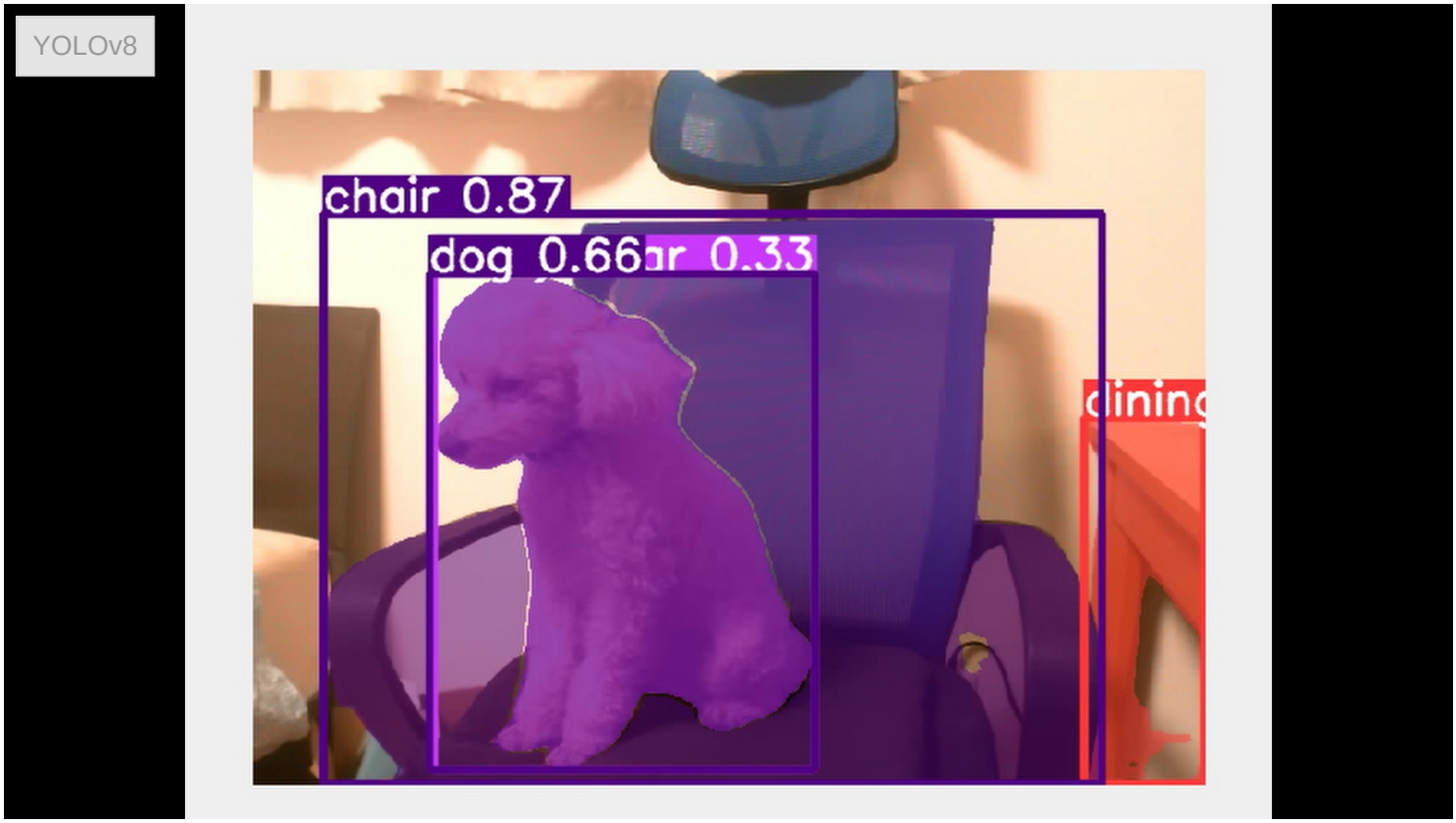
YOLOv8 on Jetson Nano



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This article explains how to run YOLOv8 on the Jetson Nano. Pre-built PyTorch and TorchVision packages are used.

Install Jetpack 4.6 (L4T 32.6.1) on Jetson Nano in advance.

Install the required packages.

```
sudo apt update
sudo apt install -y python3.8 python3.8-venv python3.8-dev python3-pip \
libopenmpi-dev libomp-dev libopenblas-dev libblas-dev libeigen3-dev libcublas-dev
```

Clone the YOLOv8 repository.

```
git clone https://github.com/ultralytics/ultralytics
cd ultralytics
```

Create a Python 3.8 virtual environment using venv.

```
python3.8 -m venv venv
source venv/bin/activate
```

Update Python packages not specified in YOLOv8.

```
pip install -U pip wheel gdown
```

Download and install the pre-built PyTorch, TorchVision package. This package was built using the method described in this article. This article also uses the pre-built package.

```
# pytorch 1.11.0
gdown https://drive.google.com/uc?id=1hs9HM0XJ2LPFghcn7ZMOs5qu5HexPXwM
# torchvision 0.12.0
gdown https://drive.google.com/uc?id=1m0d8ruUY8RvCP9eVjZw4Nc8LAwM8yuGV
python3.8 -m pip install torch-*.whl torchvision-*.whl
```

Install the Python package for YOLOv8.

```
pip install .
```

Execute object detection.

```
yolo task=detect mode=predict model=yolov8n.pt source=0 show=True
yolo task=segment mode=predict model=yolov8n-seg.pt source=0 show=True
```

Note that for object detection, tasks=detect displays bounding boxes, and tasks=segment displays bounding boxes and segmentation.

YOLOv8 has several models (yolov8n, yolov8s, yolov8m, yolov8l, yolov8x), and the following are the actual FPS when running on Jetson Nano.

	detect	segment

yolov8n	6.1	4.2
yolov8s	3.1	2.2
yolov8m	1.3	0.96
yolov8l	0.77	0.61
yolov8x	0.48	0.38

YoloV8 FPS on Jetson Nano

YOLOv8 on Jetson Nano

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