

# OpenAI Whisper

- <https://developer.nvidia.com/embedded/learn/get-started-jetson-agx-orin-devkit>

## About Whisper

- <https://openai.com/research/whisper>
- <https://github.com/openai/whisper>
- <https://towardsdatascience.com/transcribe-audio-files-with-openais-whisper-e973ae348aa7>
- [https://colab.research.google.com/github/petewarden/openai-whisper-webapp/blob/main/OpenAI\\_Whisper\\_ASR\\_Demo.ipynb](https://colab.research.google.com/github/petewarden/openai-whisper-webapp/blob/main/OpenAI_Whisper_ASR_Demo.ipynb)
- <https://huggingface.co/openai/whisper-base>
- <https://huggingface.co/openai/whisper-large-v2>

## Problems / Forums

- <https://forums.developer.nvidia.com/t/jetpack-5-1-with-jetson-linux-35-2-1-released/240548>
- <https://forums.developer.nvidia.com/t/upgrade-to-jetpack-5-1-failed/242038/3>
- <https://forums.developer.nvidia.com/t/upgrade-to-jetpack-5-1-failed/242038>
- <https://forums.developer.nvidia.com/t/solution-dpkg-error-processing-package-nvidia-l4t-bootloader-configure/208627>

## Setup

### 1. Upgrade to Jetpack 5.1

This means basically a completely **new installation** / initial setup.  
Follow [Getting Started with Jetson AGX Orin Developer Kit](#) to flash the Orin new.  
Use the [NVIDIA SDK Manager](#) to setup the Orin via USB from scratch.

### 2. Install pip and virtualenv for Python3

```
sudo apt install python3-pip
sudo apt install virtualenv

# as user upgrade pip
pip install --upgrade pip
```

### 3. Install PyTorch for Jetson



Follow [Install-PyTorch-Jetson-Platform.pdf](#)

Alternative howto:

<https://docs.nvidia.com/deeplearning/frameworks/install-pytorch-jetson-platform/index.html>

## Prepare

```
sudo apt-get -y update

sudo apt-get -y install \
autoconf bc build-essential g++-8 gcc-8 clang-8 lld-8 gettext-base
gfortran-8 \
iputils-ping libbz2-dev libc++-dev libcgall-dev libffi-dev libfreetype6-dev
libhdf5-dev \
libjpeg-dev liblzma-dev libncurses5-dev libncursesw5-dev libpng-dev
libreadline-dev libssl-dev \
libsqlite3-dev libxml2-dev libxslt-dev locales moreutils openssl python-
openssl rsync scons \
python3-pip virtualenv libopenblas-dev
```

## Check for the latest version of PyTorch for Jetpack:

<https://developer.download.nvidia.com/compute/redist/jp/v51/pytorch/>

Save the result in an environment variable:

```
export
TORCH_INSTALL=https://developer.download.nvidia.com/compute/redist/jp/v51/py
torch/torch-1.14.0a0+44dac51c.nv23.02-cp38-cp38-linux_aarch64.whl
```

## Install PyTorch in the environment nlp

```
# create and activate the environment nlp
virtualenv -p python3 nlp
source nlp/bin/activate

# pip install aiohttp numpy==1.19.4 scipy==1.5.3
pip install aiohttp numpy scipy
export "LD_LIBRARY_PATH=/usr/lib/llvm-8/lib:$LD_LIBRARY_PATH"
pip install --upgrade protobuf;
pip install --no-cache $TORCH_INSTALL
```

## Install Jupyterlab and Pandas

```
pip install pandas matplotlib jupyterlab
```

## Install Whisper by OpenAI

```
pip install -U openai-whisper
```

### In case you want to delete the installation:

```
deactivate  
rm -Rf nlp
```

## Test OpenAI Whisper

```
source nlp/bin/activate  
  
pip install ipywidgets  
  
pip install torchaudio
```

## Not working: Upgrade to Jetpack 5.1, r35.2



**Bummer! This upgrade did not work! It was corrupt!**

**The Orin did not boot anymore!**

**Workaround: Use the [NVIDIA SDK Manager](#) to setup the Orin via USB from scratch!**

Install from NVIDIA Jetson Repository: <https://repo.download.nvidia.com/jetson/>

```
sudo bash -c 'echo "deb https://repo.download.nvidia.com/jetson/common r35.2  
main" >> /etc/apt/sources.list.d/nvidia-l4t-apt-source.list'  
sudo bash -c 'echo "deb https://repo.download.nvidia.com/jetson/t234 r35.2  
main" >> /etc/apt/sources.list.d/nvidia-l4t-apt-source.list'
```

```
sudo apt update  
sudo apt dist-upgrade  
sudo apt install --fix-broken -o Dpkg::Options::="--force-overwrite"
```

```
root@agx-orin:/etc/apt/sources.list.d# apt list --upgradable  
Listing... Done  
jetson-gpio-common/stable 2.0.210ubuntu1 arm64 [upgradable from:  
2.0.180ubuntu1]  
libopencv-dev/stable 4.5.4-8-g3e4c170df4 arm64 [upgradable from:  
4.2.0+dfsg-5]  
nvidia-l4t-3d-core/stable 35.2.1-20230124153320 arm64 [upgradable from:
```

```
34.0.1-20220315011106]
nvidia-l4t-apt-source/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-bootloader/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-camera/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-configs/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-core/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-cuda/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-display-kernel/stable 5.10.104-tegra-35.2.1-20230124153320 arm64
[upgradable from: 5.10.65-tegra-34.0.1-20220315011106]
nvidia-l4t-firmware/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-gputools/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-graphics-demos/stable 35.2.1-20230124153320 arm64 [upgradable
from: 34.0.1-20220315011106]
nvidia-l4t-gstreamer/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-init/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-initrd/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-jetson-io/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-kernel-dtbs/stable 5.10.104-tegra-35.2.1-20230124153320 arm64
[upgradable from: 5.10.65-tegra-34.0.1-20220315011106]
nvidia-l4t-kernel-headers/stable 5.10.104-tegra-35.2.1-20230124153320 arm64
[upgradable from: 5.10.65-tegra-34.0.1-20220315011106]
nvidia-l4t-kernel/stable 5.10.104-tegra-35.2.1-20230124153320 arm64
[upgradable from: 5.10.65-tegra-34.0.1-20220315011106]
nvidia-l4t-libvulkan/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-multimedia-utils/stable 35.2.1-20230124153320 arm64 [upgradable
from: 34.0.1-20220315011106]
nvidia-l4t-multimedia/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-nvfancontrol/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-nvpmode-gui-tools/stable 35.2.1-20230124153320 arm64 [upgradable
from: 34.0.1-20220315011106]
nvidia-l4t-nvpmode/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-nvsci/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-oem-config/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
```

```
nvidia-l4t-optee/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-pva/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-tools/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-wayland/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-weston/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-x11/stable 35.2.1-20230124153320 arm64 [upgradable from:
34.0.1-20220315011106]
nvidia-l4t-xusb-firmware/stable 35.2.1-20230124153320 arm64 [upgradable
from: 34.0.1-20220315011106]
python-jetson-gpio/stable 2.0.210ubuntu1 arm64 [upgradable from:
2.0.180ubuntu1]
python3-jetson-gpio/stable 2.0.210ubuntu1 arm64 [upgradable from:
2.0.180ubuntu1]
root@agx-orin:/etc/apt/sources.list.d#
```

```
Setting up nvidia-l4t-bootloader (35.2.1-20230124153320) ...
3701--0000--1--jetson-agx-orin-devkit-
Info. Active boot storage: mmcblk0
Info. Legacy mode: true
INFO. Dump nv_boot_control.conf:
TNSPEC 3701-500-0000-M.0-1-1-jetson-agx-orin-devkit-mmcblk0p1
COMPATIBLE_SPEC 3701--0000--1--jetson-agx-orin-devkit-
TEGRA_LEGACY_UPDATE true
TEGRA_BOOT_STORAGE mmcblk0
TEGRA_EMMC_ONLY false
TEGRA_CHIPID 0x23
TEGRA_OTA_BOOT_DEVICE /dev/mtdblock0
TEGRA_OTA_GPT_DEVICE /dev/mtdblock0
Starting bootloader post-install procedure.
Starting legacy update procedure.
```

```
Update bl_only_payload completed.
Updating esp partition...
done.
Reboot the target system for changes to take effect.
Updating extlinux.conf...
Root device is set in the extlinux.conf
Setting up nvidia-l4t-nvsci (35.2.1-20230124153320) ...
Setting up nvidia-l4t-gputools (35.2.1-20230124153320) ...
Setting up nvidia-l4t-wayland (35.2.1-20230124153320) ...
Setting up jetson-gpio-common (2.0.210ubuntu1) ...
Setting up nvidia-l4t-xusb-firmware (35.2.1-20230124153320) ...
```

```
Setting up nvidia-l4t-cuda (35.2.1-20230124153320) ...
Setting up nvidia-l4t-optee (35.2.1-20230124153320) ...
Setting up nvidia-l4t-kernel (5.10.104-tegra-35.2.1-20230124153320) ...
Using the existing boot entry 'primary'
3701--0000--1--jetson-agx-orin-devkit-
Info. Active boot storage: mmcblk0
Info. Legacy mode: true
Starting kernel post-install procedure.
Starting legacy update procedure.
ERROR. Procedure for A_kernel-dtb update FAILED.
Cannot install package. Exiting...
dpkg: error processing package nvidia-l4t-kernel (--configure):
 installed nvidia-l4t-kernel package post-installation script subprocess
returned error exit status 1
Setting up nvidia-l4t-nvpmodegui-tools (35.2.1-20230124153320) ...
Setting up python-jetson-gpio (2.0.210ubuntu1) ...
Setting up nvidia-l4t-nvfancontrol (35.2.1-20230124153320) ...
Installing new version of config file
/etc/nvpower/nvfancontrol/nvfancontrol_e3900.conf ...
Installing new version of config file
/etc/nvpower/nvfancontrol/nvfancontrol_p2888.conf ...
Installing new version of config file
/etc/nvpower/nvfancontrol/nvfancontrol_p3668.conf ...
Installing new version of config file
/etc/nvpower/nvfancontrol/nvfancontrol_p3701_0000.conf ...
Installing new version of config file
/etc/systemd/system/nvfancontrol.service ...
dpkg: dependency problems prevent configuration of nvidia-l4t-kernel-
headers:
 nvidia-l4t-kernel-headers depends on nvidia-l4t-kernel (= 5.10.104-
tegra-35.2.1-20230124153320); however:
 Package nvidia-l4t-kernel is not configured yet.

dpkg: error processing package nvidia-l4t-kernel-headers (--configure):
 dependency problems - leaving unconfigured
dpkg: dependency problems prevent configuration of nvidia-l4t-jetson-io:
 nvidia-l4t-jetson-io depends on nvidia-l4t-kernel (> 5.10.104-
tegra-35.2-0); however:
 Package nvidia-l4t-kernel is not configured yet.
 nvidia-l4t-jetson-io depends on nvidia-l4t-kernel (< 5.10.104-
tegra-35.3-0); however:
 Package nvidia-l4t-kernel is not configured yet.

No apport report written because the error message indicates its a followup
error from a previous failure.
No apport report written because the error message indicates its a followup
error from a previous
failure.
 dpkg: error processing package nvidia-l4t-jetson-io (--configure):
 dependency problems - leaving unconfigured
Setting up nvidia-l4t-x11 (35.2.1-20230124153320) ...
```

```
Installing new version of config file /etc/X11/xorg.conf.t194_ref ...
Setting up nvidia-l4t-3d-core (35.2.1-20230124153320) ...
Setting up python3-jetson-gpio (2.0.210ubuntu1) ...
dpkg: dependency problems prevent configuration of nvidia-l4t-display-
kernel:
 nvidia-l4t-display-kernel depends on nvidia-l4t-kernel (= 5.10.104-
tegra-35.2.1-20230124153320); however:
  Package nvidia-l4t-kernel is not configured yet.

dpkg: error processing package nvidia-l4t-display-kernel (--configure):
 dependency problems - leaving unconfigured
Setting up nvidia-l4t-initrd (35.2.1-20230124153320) ...
No apport report written because MaxReports is reached already
Setting up
nvidia-l4t-multimedia (35.2.1-20230124153320) ...
dpkg: dependency problems prevent configuration of nvidia-l4t-kernel-dtbs:
 nvidia-l4t-kernel-dtbs depends on nvidia-l4t-kernel (= 5.10.104-
tegra-35.2.1-20230124153320); however:
  Package nvidia-l4t-kernel is not configured yet.

dpkg: error processing package nvidia-l4t-kernel-dtbs (--configure):
 dependency problems - leaving unconfigured
Setting up nvidia-l4t-pva (35.2.1-20230124153320) ...
No apport report written because MaxReports is reached already
Setting up
nvidia-l4t-gbm (35.2.1-20230124153320) ...
Setting up nvidia-l4t-camera (35.2.1-20230124153320) ...
Setting up nvidia-l4t-gstreamer (35.2.1-20230124153320) ...
Setting up nvidia-l4t-weston (35.2.1-20230124153320) ...
Setting up nvidia-l4t-graphics-demos (35.2.1-20230124153320) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Errors were encountered while processing:
 nvidia-l4t-kernel
 nvidia-l4t-kernel-headers
 nvidia-l4t-jetson-io
 nvidia-l4t-display-kernel
 nvidia-l4t-kernel-dtbs
E: Sub-process /usr/bin/dpkg returned an error code (1)
```

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