Installation and configuration of Kaldi with PyKaldi wrapper

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How the document is organized:

1. Background

My Operating System is Linux Netrunner which is an Ubuntu variant.

It is better to have Anaconda installed, which will simplify developing [1].

Python version I use is Python 3.7.

2. Introduction

Kaldi is an open-source speech recognition toolkit written in C++ for speech recognition and signal processing, freely available under the Apache License v2.0 [2]. PyKaldi is a Python scripting layer for the Kaldi speech recognition toolkit [3].

3. How to add pykaldi library into conda

Made an empty conda environment which has no python libraries inside. I gave its name as 'kaldienv' when creating [4].

conda create --name kaldienv

Activated that environment:

conda activate kaldienv

Installed pykaldi into kaldienv [5]. I installed it for CPU only since I do not have a GPU for CUDA support [6].

conda install -c pykaldi pykaldi-cpu

Other related libraries also will be installed into the environment with PyKaldi. The following command will list all the other related libraries installed with pykaldi.

conda list

4. How to setup computer to install Kaldi

Installed Kaldi using following steps.

I updated my OS.

sudo apt-get update

sudo apt-get upgrade

Installed GIT. If already installed it will say it is up to date.

sudo apt-get install git

Install bc. bc is a programming language [7].

sudo apt-get install bc

Installed c++ compiler, because kaldi is written in c/c++ , to compile it needs a compiler.

sudo apt-get install g++

Install linux packages needed to compile Kaldi. Those are named as make, automake, autoconf, bzip2, libtool, subversion, libatlas3-base.

sudo apt-get install zlib1g-dev make automake autoconf bzip2 libtool subversion

sudo apt-get install libatlas3-base

5. How to install Kaldi

I made a folder named kaldi.

mkdir kaldi

Cloned kaldi from github [8].

git clone http://github.com/kaldi-asr/kaldi.git kaldi --origin upstream

Changed directory using following command.

cd kaldi/tools

The following command shows you if any dependency is missing.

extras/check_dependencies.sh

I missed sox. Sox is a package to read write sound files [9].

I installed it using:

sudo apt-get install sox

Again, ran this command to see any other dependency is missing.

extras/check_dependencies.sh

Ran the following command to compile kaldi. This will take a long time.

make

To install the irst language model, used the following command.

Current folder is kaldi/tools, changed it to kaldi/src.

cd .. is to go back one directory back. **cd** is the command to change directory. **mkdir** is to make a new directory. I mentioned these simple commands thinking if you are new to linux.

cd kaldi/src

Inside this directory, ran the following commands one after the other which took a long time to complete.

./configure --shared

This gave me an error, MKL library missing error occurred [10]. I fixed it as follows.

Downloaded MKL (Math Kernel) library from Intel website [11].

Installed intel MKL into /opt/intel folder in my machine.

I re-ran the command, **./configure --shared**

Then compiled using following commands.

make depend

make

Installed the language model kaldi_lm inside kaldi/tools directory.

cd kaldi/tools

extras/install_kaldi_lm.sh

6. References

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