

How to remove noise from audio in less than 10 seconds

D

Devesh Kumar · [Follow](#)

3 min read · Sep 9, 2023



5



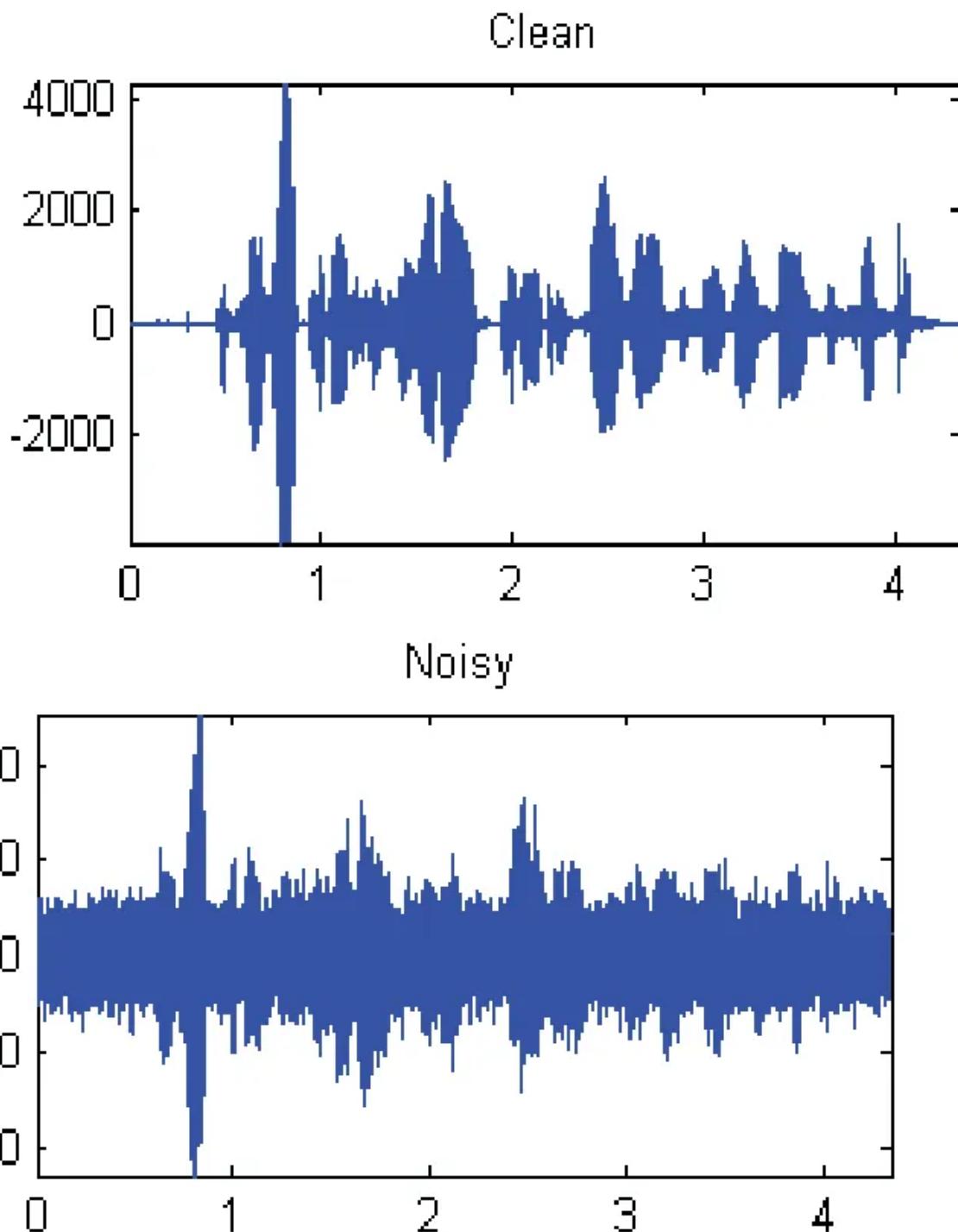


Image taken from — https://www.researchgate.net/figure/Clean-and-Noisy-Speech-Signal_fig1_296675004

Medium



Search



Write

Sign up

Sign in



work or not, and wished for a better listening experience, you've probably considered using online tools to remove that unwanted background noise. But with concerns about the privacy and security of your audio files, it's time to take matters into your own hands. I'll guide you through the process of cleaning your audio using a straightforward

Python tool known as DeepFilterNet.

What is DeepFilterNet ?

I won't go into much depth about this tool. You can think of it as a library/model that you can use for enhancing audio files, particularly for removing noise. If you want to deep dive into this library you can to their [GitHub page](#) and read their research papers and info.

Prerequisite

This isn't a long list if you just want to run the tool. You will need the 3 things to run it.

1. Python3
2. Torch and torchaudio (>1.9) (I will show how to easily install them if you don't know)
3. Some editor of your preference (not necessary but is helpful)

Note -> I ran this on a Linux machine but the process should be the same for other systems also.

Installing the required things

I am assuming you have python3 installed if not you can easily find some article on how to install it.

You will need to clone the [GitHub repository](#) which has also the necessary things for using it.

On linux you run “git clone <https://github.com/Rikorose/DeepFilterNet>” on

command prompt and it will clone the repository

Once you have cloned the repository, I recommend using a virtual env as it will make sure that your other packages won't be affected.

```
pip install torch torchaudio -f https://download.pytorch.org/whl/cpu/torch_s...
```

This command will install the torch and torchaudio in your environment. They recommend using >1.9 and I have used 2.0.1 so you can rest assured that at least for these versions it works.

Open the command prompt from the base directory of DeepFilterNet and enter the commands

```
cd pyDF
python setup.py install
## This installs the python wrapper for DeepFilterNet
pip install deepfilternet
## This installs the library and use you can import it in your file
```

This installs all the required things for using the model.

For editor, I recommend using VS Code or PyCharm but even a simple notepad can be used (by giving an extension as .py)

Use it in your Python script

I will take the sample example given by the DeepFilterNet developers for a demo.

```
from df.enhance import enhance, init_df, load_audio, save_audio
from df.utils import download_file

if __name__ == "__main__":
    # Load default model
    model, df_state, _ = init_df()
    # Download and open some audio file. You use your audio files here
    audio_path = download_file(
        "https://github.com/Rikorose/DeepFilterNet/raw/e031053/assets/noisy_",
        download_dir=".",
    )
    audio, _ = load_audio(audio_path, sr=df_state.sr())
    # Denoise the audio
    enhanced = enhance(model, df_state, audio)
    # Save for listening
    save_audio("enhanced.wav", enhanced, df_state.sr())
```

```
[root@devesh ~]# pip install --upgrade pip
(venv) (base) devesh@devesh:~/Desktop/DeepFilterNet$ python test.py
2023-09-09 17:38:59 | INFO    | DF | Running on torch 2.0.1+cpu
2023-09-09 17:38:59 | INFO    | DF | Running on host devesh
2023-09-09 17:38:59 | INFO    | DF | Git commit: 9635304, branch: main
2023-09-09 17:38:59 | INFO    | DF | Loading model settings of DeepFilterNet3
2023-09-09 17:38:59 | INFO    | DF | Using DeepFilterNet3 model at /home/devesh
/.cache/DeepFilterNet/DeepFilterNet3
2023-09-09 17:38:59 | INFO    | DF | Initializing model `deepfilternet3`
2023-09-09 17:38:59 | INFO    | DF | Found checkpoint /home/devesh/.cache/DeepF
ilterNet/DeepFilterNet3/checkpoints/model_120.ckpt.best with epoch 120
2023-09-09 17:38:59 | INFO    | DF | Running on device cpu
2023-09-09 17:38:59 | INFO    | DF | Model loaded
(venv) (base) devesh@devesh:~/Desktop/DeepFilterNet$
```

This will download a sample noisy audio file, save it in the working directory, remove noise from it, and store it in a file “enhanced.wav” in the same directory.

You can listen to both of these files and see the magic.

For using your own file you just need to change the file to whatever file you want to clean.

Note -> This tool was built for 48khz wav files so for other files you might observe different performance but overall this is great for a simple tool.

Running Directly from Command Prompt

```
# Specify an output directory with - output-dir [OUTPUT_DIR]
deepFilter path/to/noisy_audio.wav
```

You can use it to directly run from the command line after installing DeepFilterNet.

Ending

Now you can easily clean noisy audio through a simple script. If you liked this article you can clap the article and follow me on Medium for more such informative articles.

Connect with me on [LinkedIn](#)

Deepfilternet

Python

Audio

Clean Audio

Noisy Audio



D

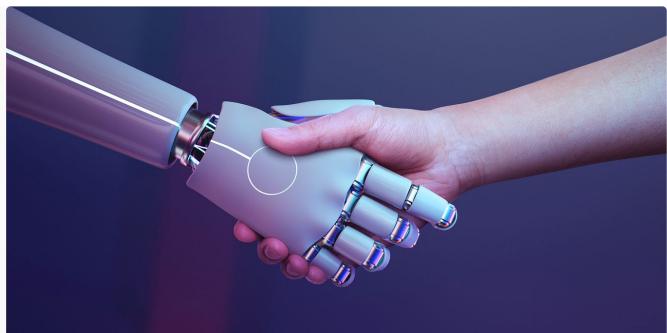
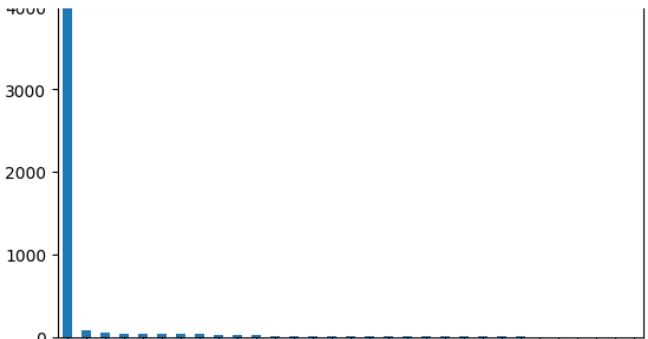
Written by Devesh Kumar

15 Followers

Follow



More from Devesh Kumar



D Devesh Kumar

Building a simple Spam Classifier using Scikit-learn

Hey there! 🌟 Ever found your inbox filled with annoying spam messages? We've all...

Aug 7, 2023

6



D Devesh Kumar

Getting Started with GEMMA

Recently Google released a set of models called Gemma, which is a family of...

Feb 23

145



D Devesh Kumar

Host your webapp/api for free

Many of you may have experience in developing websites or web apps using...

Aug 10, 2023



D Devesh Kumar

Devesh

Aug 4, 2023



See all from Devesh Kumar

Recommended from Medium

$\sum_{n=0}^{N-1} x[n] \cdot e^{-j \frac{2\pi}{N} kn}$

complex-valued result in the frequency domain at the k -th frequency bin
input sequence in the time domain at the n -th sample.
length of the sequence.
inary unit ($j^2 = -1$).
 $-j \frac{2\pi}{N} kn$ is the twiddle factor, which represents the rotation in the complex



 Aqeel Ahmed

Fourier Transform for Beginners with Python Code

The Fourier Transform is a mathematical transformation used in signal processing...

 Feb 27  7



 Harshivs

Wavelet Spectrogram: Leveraging Wavelet Transform...

Unlock hidden details in sound! Wavelet spectrograms, traditional for fast frequen...

Mar 19  151



Lists



Coding & Development

11 stories · 687 saves



Predictive Modeling w/ Python

20 stories · 1342 saves



Practical Guides to Machine Learning

10 stories · 1623 saves



ChatGPT

21 stories · 699 saves

- Developed Amazon checkout and payment services to handle traffic of 10 Million daily global transactions
- Integrated Iframes for credit cards and bank accounts to secure 80% of all consumer traffic and prevent CSRF, cross-site scripting, and cookie-jacking
- Led Your Transactions implementation for JavaScript front-end framework to showcase consumer transactions and reduce call center costs by \$25 Million
- Recovered Saudi Arabia checkout failure impacting 4000+ customers due to incorrect GET form redirection

Projects**NinjaPrep.io (React)**

- Platform to offer coding problem practice with built in code editor and written + video solutions in React
- Utilized Nginx to reverse proxy IP address on Digital Ocean hosts
- Developed using Styled-Components for 95% CSS styling to ensure proper CSS scoping
- Implemented Docker with Seccomp to safely run user submitted code with < 2.2s runtime

HeatMap (JavaScript)

- Visualized Google Takeout location data of location history using Google Maps API and Google Maps heatmap code with React
- Included local file system storage to reliably handle 5mb of location history data
- Implemented Express to include routing between pages and jQuery to parse Google Map and implement heatmap overlay



 Alexander Nguyen in Level Up Coding

The resume that got a software engineer a \$300,000 job at...

1-page. Well-formatted.

★ Jun 1 ⌘ 11.1K 🎧 145



 Franz Bender

Subharmonic Synthesis for Bass Enhancement

Diving into personal audio processing adventures, focusing on bass enhanceme...

Jan 21 ⌘ 1



 Mark OBrien

Whisper & Python for Video Transcription

Explore the Whisper Model from OpenAI for audio transcription made easy, fully local

★ Mar 4 ⌘ 6



 Minesh A. Jethva in Time Series ML

DSP: Exploring Biomedical Signal Processing with Python: A...

Biomedical signal processing

★ Mar 17 ⌘ 2



See more recommendations

