

打鼾音訊分辨

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使用資料

Snoring

For classifying snoring and non-snoring sounds

Data Card

Code (3)

Discussion (1)

Dataset Notebooks



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Deep-learning Snoring Detector - version 2.0

Updated 7mo ago

0 comments · Snoring +1

▲ 3



使用環境

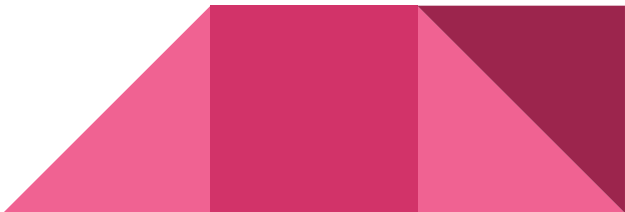


CPU設備

```
['processor\t: 0', 'vendor id\t: GenuineIntel', 'cpu family\t: 6', 'model\t\t: 79', 'model name\t: Intel(R) Xeon(R) CPU @ 2.20GHz', 'stepping\t: 0', 'microcode\t: 0xffffffff', 'cpu MHz\t\t: 2199.998', 'cache size\t: 56320 KB', 'physical id\t: 0', 'siblings\t: 2', 'core id\t\t: 0', 'cpu cores\t: 1', 'apicid\t\t: 0', 'initial apicid\t: 0', 'fpu\t\t: yes', 'fpu exception\t: yes', 'cpuid level\t: 13', 'wp\t\t: yes', 'flags\t\t: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm constant tsc rep good nopl xtopology nonstop tsc cpuid tsc known freq pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand hypervisor lahf_lm abm 3dnowprefetch invpcid single ssbd ibrs ibpb stibp fsgsbase tsc adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm rdseed adx smap xsaveopt arat md clear arch capabilities', 'bugs\t\t: cpu meltdown spectre_v1 spectre_v2 spec_store_bypass lltf mds swapgs taa mmio stale data retbleed', 'bogomips\t: 4399.99', 'clflush size\t: 64', 'cache alignment\t: 64', 'address sizes\t: 46 bits physical, 48 bits virtual', 'power management:', '', 'processor\t: 1', 'vendor id\t: GenuineIntel', 'cpu family\t: 6', 'model\t\t: 79', 'model name\t: Intel(R) Xeon(R) CPU @ 2.20GHz', 'stepping\t: 0', 'microcode\t: 0xffffffff', 'cpu MHz\t\t: 2199.998', 'cache size\t: 56320 KB', 'physical id\t: 0', 'siblings\t: 2', 'core id\t\t: 0', 'cpu cores\t: 1', 'apicid\t\t: 1', 'initial apicid\t: 1', 'fpu\t\t: yes', 'fpu exception\t: yes', 'cpuid level\t: 13', 'wp\t\t: yes', 'flags\t\t: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp lm constant tsc rep good nopl xtopology nonstop tsc cpuid tsc known freq pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand hypervisor lahf_lm abm 3dnowprefetch invpcid single ssbd ibrs ibpb stibp fsgsbase tsc adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm rdseed adx smap xsaveopt arat md clear arch capabilities', 'bugs\t\t: cpu meltdown spectre_v1 spectre_v2 spec_store_bypass lltf mds swapgs taa mmio stale data retbleed', 'bogomips\t: 4399.99', 'clflush size\t: 64', 'cache_alignment\t: 64', 'address sizes\t: 46 bits physical, 48 bits virtual', 'power management:', '']
```

GPU

```
['Sun Jun 18 14:13:37 2023 ',
'+-----+', '| NVIDIA-SMI
525.85.12 Driver Version: 525.85.12 CUDA Version: 12.0 |',
'|-----+', '| GPU Name
Persistence-M| Bus-Id Disp.A | Volatile Uncorr. ECC |', '| Fan Temp Perf Pwr:Usage/Cap| Memory-Usage |
GPU-Uutil Compute M. |', '| | | MIG M. |',
'|=====+', '0 Tesla T4 Off |
00000000:00:04.0 Off | 0 |', '| N/A 52C P8 10W / 70W | 0MiB / 15360MiB | 0% Default |', '| | | N/A |',
'+-----+', ' ',
'+-----+', '| Processes: |', '|
GPU GI CI PID Type Process name GPU Memory |', '| ID ID Usage |',
'|=====+', '| No running
processes found |', '+-----+']
```



內容

鼾聲wav音檔 1s*500

非鼾聲wav音檔 1s*500

名稱

0

1
















Snoring_dataset.txt

類型

檔案資料夾

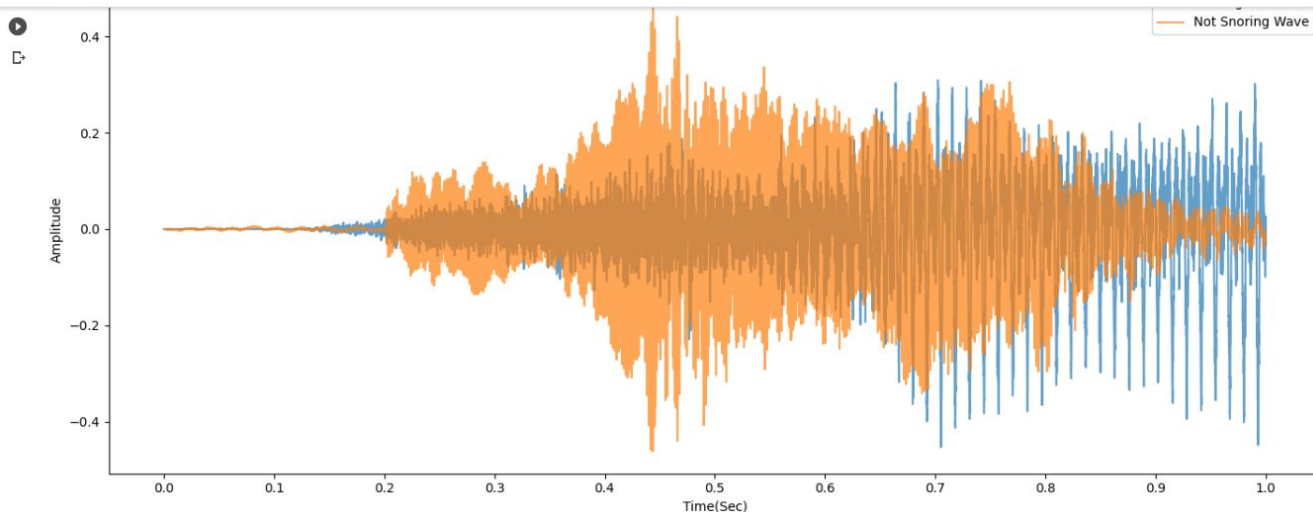
檔案資料夾

文字文件

 1_0.wav	WAV 檔案	76 KB
 1_1.wav	WAV 檔案	60 KB
 1_2.wav	WAV 檔案	86 KB
 1_3.wav	WAV 檔案	79 KB
 1_4.wav	WAV 檔案	82 KB
 1_5.wav	WAV 檔案	44 KB
 1_6.wav	WAV 檔案	67 KB
 1_7.wav	WAV 檔案	49 KB
 1_8.wav	WAV 檔案	87 KB
 1_9.wav	WAV 檔案	64 KB
 1_10.wav	WAV 檔案	68 KB
 1_11.wav	WAV 檔案	86 KB
 1_12.wav	WAV 檔案	69 KB
 1_13.wav	WAV 檔案	52 KB
 1_14.wav	WAV 檔案	70 KB
 1_15.wav	WAV 檔案	88 KB
 1_16.wav	WAV 檔案	51 KB

python匯入並轉tensor格式

+ 程式碼 + 文字



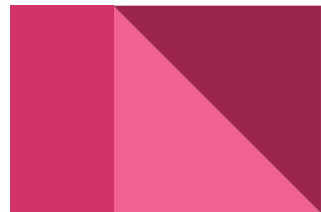
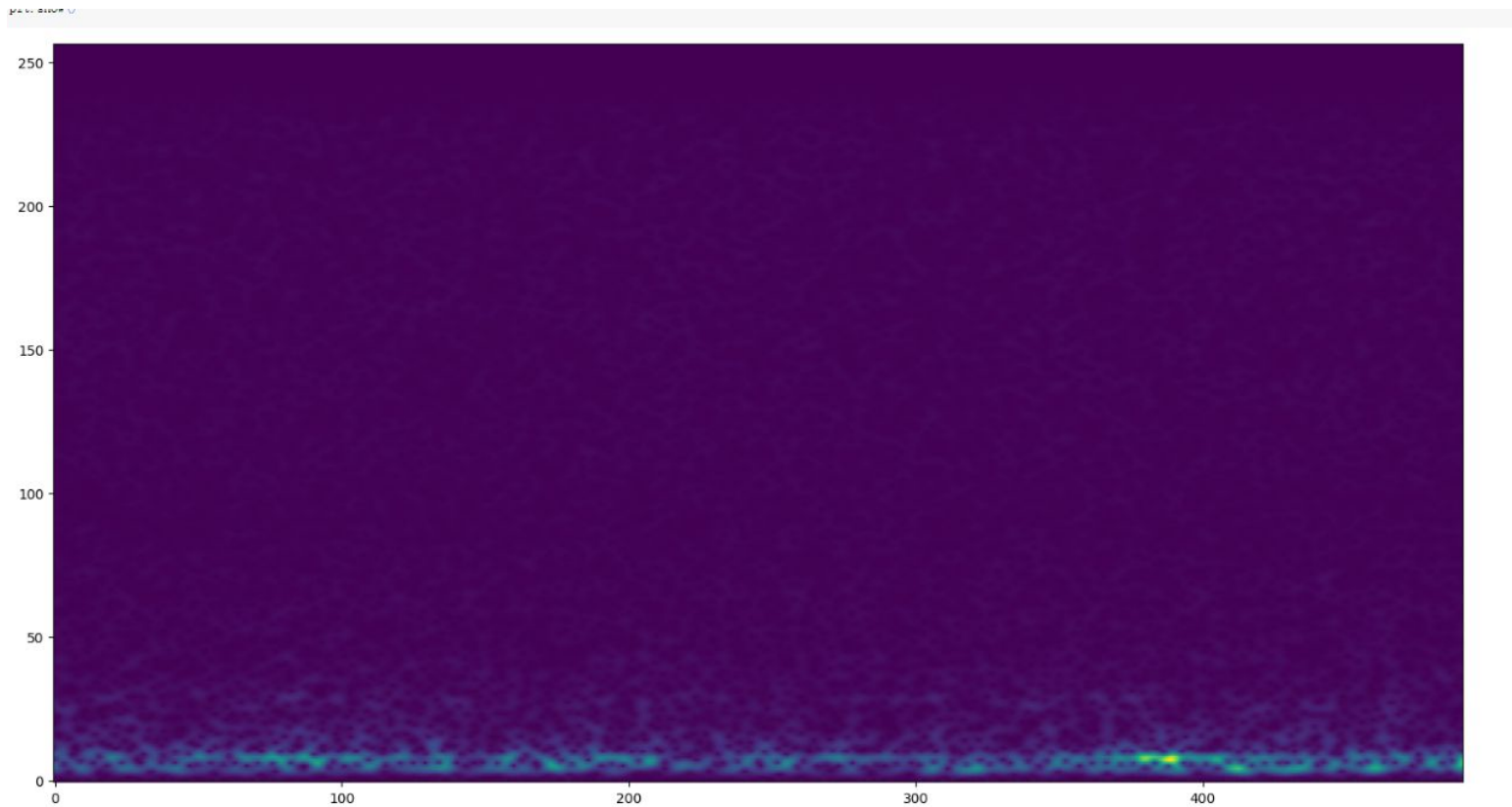
```
[ ] pos = tf.data.Dataset.list_files(SNORING_DATA_PATH+'/*.wav')
    neg = tf.data.Dataset.list_files(NOT_SNORING_DATA_PATH+'/*.wav')
```

```
[ ] positives = tf.data.Dataset.zip((pos, tf.data.Dataset.from_tensor_slices(tf.ones(len(pos)))))
    negatives = tf.data.Dataset.zip((neg, tf.data.Dataset.from_tensor_slices(tf.zeros(len(neg)))))
    data = positives.concatenate(negatives)
```

```
[ ] lengths = []
    for file in os.listdir(os.path.join(NOT_SNORING_DATA_PATH)):
        tensor_wave = load_wav_16k_mono(os.path.join(NOT_SNORING_DATA_PATH, file))
        lengths.append(len(tensor_wave))
```

WARNING:tensorflow: From /usr/local/lib/python3.6/dist-packages/tensorflow/python/data/dataset_ops.py:111: tf.nn.conv2d is deprecated and will be removed in a future version. Please use tf.nn.conv2d_v2 instead.

頻譜圖資料



製作CNN模型(範例)

Model: "sequential"

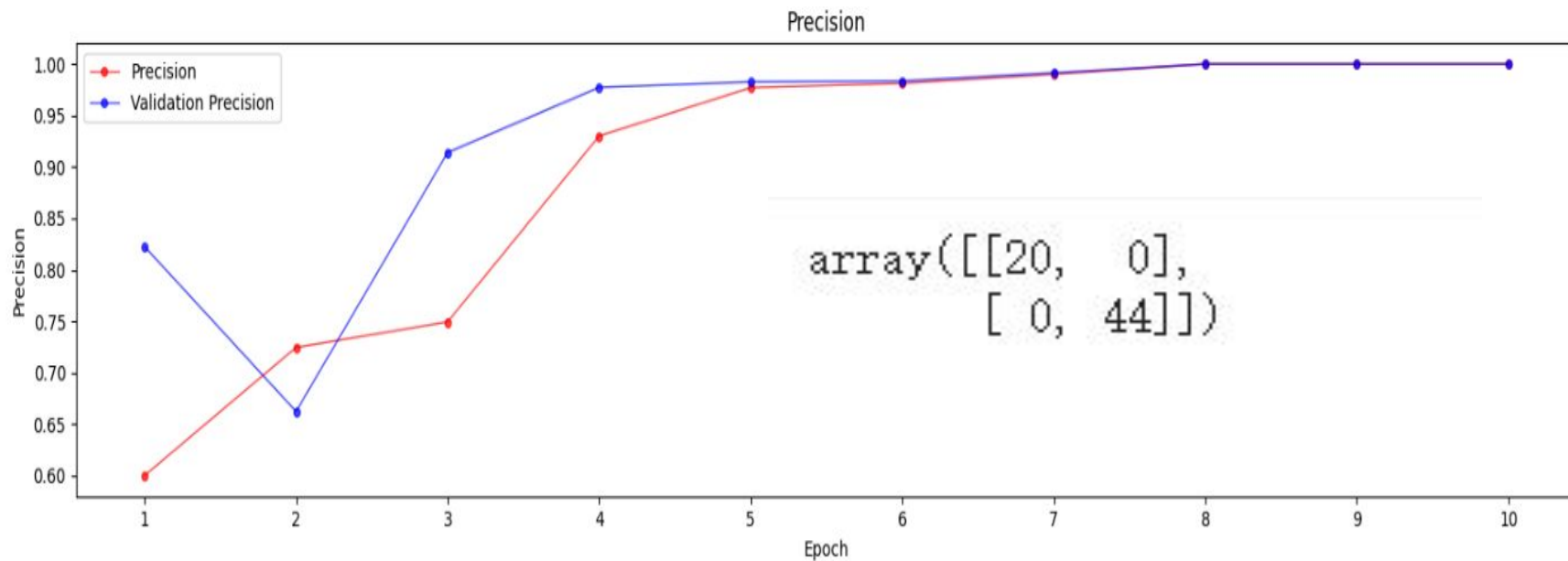
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 489, 255, 16)	160
conv2d_1 (Conv2D)	(None, 487, 253, 16)	2320
flatten (Flatten)	(None, 1971376)	0
dense (Dense)	(None, 128)	252336256
dense_1 (Dense)	(None, 1)	129

Total params: 252,338,865

Trainable params: 252,338,865

Non-trainable params: 0

訓練成果



製作MLP模型

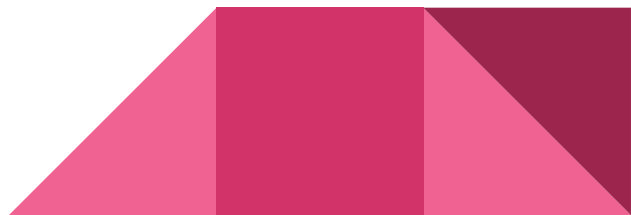
| Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 491, 257, 20)	40
flatten (Flatten)	(None, 2523740)	0
dense_1 (Dense)	(None, 20)	50474820
dense_2 (Dense)	(None, 1)	21
Total params: 50,474,881		
Trainable params: 50,474,881		
Non-trainable params: 0		

訓練成果

```
{'loss': [0.04521067067980766],  
'recall': [0.9897698163986206],  
'precision': [0.9974226951599121],  
'val_loss': [0.027778806164860725],  
'val_recall': [1.0],  
'val_precision': [1.0]}
```

```
array([[37,  0],  
       [ 0, 27]])
```



時間

	CPU	GPU T4
CNN	23m	52s
MLP	11m	21s

參考資料

<https://www.kaggle.com/datasets/tareqkhanemu/snoring/code>

