Project DL Course

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Introduction

Chapter 1

Face Orientation Classification

1.1 VGG19

VGG19

1.2 MobileNet + Clustering

MobileNet + Clustering

1.3 CNN from the Scratch

CNN from the Scratch

1.3.1 Experiment setup

Our Convolution Neural Network experiment was conducted using "Google Colab", with a GPU machine. This is the GPU characteristic capture during the execution time.

Wed Jul

		450.36.06				418.67	CUDA Versio	on: 10.1
GPU Fan	Name Temp	Perf	Persist Pwr:Usa	ence-M ge/Cap	Bus-Id	Disp.A Memory-Usage	Volatile GPU-Util	Uncorr. ECC Compute M. MIG M.
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N/A	35C	P8	26W /	149W	OM	iB / 11441MiB	0%	Default

ERR!

Now we can observe the CPU characteristics of the Colab Machine

Architecture: x86_64

CPU op-mode(s): 32-bit, 64-bit Byte Order: Little Endian

CPU(s): 2
On-line CPU(s) list: 0,1
Thread(s) per core: 2
Core(s) per socket: 1
Socket(s): 1
NUMA node(s): 1

Vendor ID: GenuineIntel

CPU family: 6 Model: 79

Model name: Intel(R) Xeon(R) CPU @ 2.20GHz

Stepping: 0

CPU MHz: 2200.000
BogoMIPS: 4400.00
Hypervisor vendor: KVM
Virtualization type: full
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 56320K
NUMA node0 CPU(s): 0,1

Next we present the Convolution Neural Network develop to analyze the Celeba Images. We have chosen to take the whole resolution of image as the input of the Network. The strategy devised was inspired on the experiment from [2] with the FashinMinst dataset.

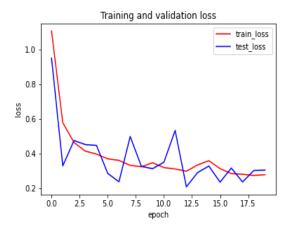
1.3.2 First Analyzes

We ran an experiment with a training set of 8.383 images and a validation set of 1.181 images, for the three categories (pose left, pose front and pose right).

Found 8383 images belonging to 3 classes. Found 1811 images belonging to 3 classes.

input: (None, 218, 178, 3) output: (None, 218, 178, 3) conv2d_1_input: InputLayer input: (None, 218, 178, 3) output: (None, 216, 176, 32) conv2d_1: Conv2D input: (None, 216, 176, 32) output: (None, 214, 174, 32) batch_normalization_2: BatchNormalization | input: (None, 214, 174, 32) | output: (None, 214, 174, 32) max_pooling2d_1: MaxPooling2D output: (None, 214, 174, 32) output: (None, 107, 87, 32) input: (None, 107, 87, 32)
output: (None, 107, 87, 32)
input: (None, 107, 87, 32) dropout_1: Dropout input: (None, 107, 87, 32) output: (None, 105, 85, 64) conv2d_3: Conv2D input: (None, 52, 42, 64) output: (None, 52, 42, 64) input: (None, 52, 42, 64) output: (None, 50, 40, 128) conv2d_4: Conv2D batch_normalization_4: BatchNormalization input: (None, 25, 20, 128)
output: (None, 25, 20, 128)
input: (None, 25, 20, 128)
output: (None, 64000) dropout_3: Dropout input: (None, 64000) output: (None, 512) dense_1: Dense batch_normalization_5: BatchNormalization output: (None, 512) output: (None, 512) dropout_5: Dropout input: (None, 512)
output: (None, 512) dense_3: Dense output: (None, 512)

Figure 1.1: Convolution Neural Network with 4 layers)



Chapter 2

Light Source Origin Classification

2.1 Technique 1

Technique 1

2.2 Technique 2

Technique 2

Chapter 3

Conclusions

Bibliography

- [1] Dr. Caio; Super Awesome Paper for CNNs, University of Toronto, March 13 2020.
- [2] James Le; Trained an even deeper CNN classifier with 4 convolution layers, Github checked on 1st of July 2021.