



# Facial Recognition And Identification: An Applied model in Unsupervised learning by PyTorch

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# content

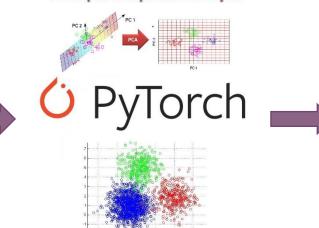
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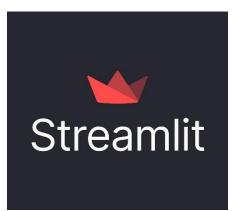
### Introduction





Dimensionality Reduction Principal Component Analysis





# **Exploratory data analysis**



## **Dimensionality reduction : PCA**

Person 1



Person 6



Person 11



Person 16





Person 7

Person 12

Person 17

Reconstructed Images of 20 People After PCA Person 3

Person 8









Person 9



Person 14



Person 19





Person 10



Person 15



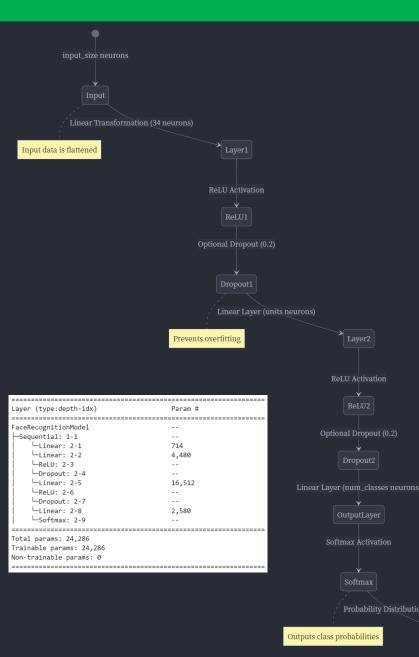


Dimensionality reduction is the process of reducing the number of features in a dataset.

- This is important mainly in the case when we want to reduce variance in our model (overfitting).
- It avoids the curse of dimensionality

PCA(n\_components=66) Explained variance: 0.92

# Training



### Pred: 11, Actual: 11







Pred: 17, Actual: 17



Pred: 5, Actual: 5



20

### Pred: 15, Actual: 15



Pred: 8, Actual: 8





Pred: 0, Actual: 0



### Training Set Predictions Pred: 7, Actual: 7



Pred: 15, Actual: 15



Pred: 16, Actual: 16







Pred: 18, Actual: 18

Pred: 5, Actual: 5



Pred: 12, Actual: 12

Pred: 12, Actual: 12



Pred: 2, Actual: 2 Pred: 11, Actual: 11



Pred: 11, Actual: 11









## **Result: testing**

Class	Precision	Recall	F1-Score	
Class 0	1	1	1	
Class 1	1	0.8571	0.9231	
Class 2	0.8333	1	0.9091	
Class 3	1	0.8	0.8889	
Class 4	1	0.8	0.8889	Pred: 16, Actual: 14
Class 5	1	1	1	36
Class 6	1	1	1	1
Class 7	0.6667	1	0.8	Pred: 1, Actual: 1
Class 8	1	0.75	0.8571	1013
Class 9	0.75	1	0.8571	
Class 10	1	0.8571	0.9231	Pred: 10, Actual: 10
Class 11	1	1	1	
Class 12	1	1	1	3
Class 13	0.75	1	0.8571	Pred: 7, Actual: 7
Class 14	1	0.75	0.8571	130
Class 15	1	0.6	0.75	N.S.
Class 16	0.8333	1	0.9091	
Class 17	1	1	1	
Class 18	1	1	1	
Class 19	1	1	1	
Overall Accuracy			0.9304	

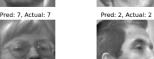
Pred: 14, Actual: 14















Test Set Predictions

Pred: 10. Actual: 10

Pred: 16, Actual: 16







Pred: 18, Actual: 18







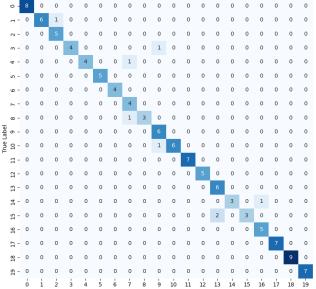




Pred: 3, Actual: 3

Pred: 2. Actual: 2





Confusion Matrix

- 3 - 2 - 1

- 0

# **Result: Validation**

### Pred: 5, Actual: 5







Pred: 0, Actual: 0





### Validation Set Predictions



Pred: 11, Actual: 11

Pred: 16, Actual: 16

Pred: 18, Actual: 18

Pred: 9, Actual: 9

Pred: 19, Actual: 19



Pred: 14, Actual: 14



Pred: 9, Actual: 9



Pred: 18, Actual: 18



Pred: 0, Actual: 0



Pred: 7, Actual: 8



Pred: 10, Actual: 10



### Pred: 16, Actual: 16



Pred: 15, Actual: 15



Pred: 8, Actual: 8



Pred: 6, Actual: 6



# Live Demo





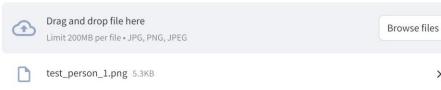
Deploy :

×

### **Face Recognition App**

Upload an image to predict the class.

Choose an image file





# Thank you!