

UNIVERSITÀ DEGLI STUDI DI PADOVA

Gender and age estimation through interaction with Pepper robot

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INPUT DATASET

Test input













JoJoGAN

Style references



Pepper's camera style

Photos from Pepper's camera are only from people between 20 and 30 years old.



Style-based Age Manipulation (SAM)



Style-based Age Manipulation (SAM)

IAS-LAB















- Pretrained on FFHQ dataset
- Image size 1024x1024 or 256x256

SAM results for the age of: 54 years

SAM results for the age of: 64 years

SAM results for the age of: 74 years

SAM results for the age of: 84 years		
888	1	

SAM results for the age of: 94 years			
6 6 6	0	1	
SAM results for the age of: 108 years	Manue	1000	196

SAM results for the age of: 10	B years		
3 9			

Age groups	Age intervals (years)
0	0-2
1	3-12
2	13-19
3	20-29
4	30-39
5	40-49
6	50-59
7	60-69
8	70-79
9	80-89
10	90-99
11	Over 100

How many images to keep from SAM and how many from the originals for the style references?



Testing: 1-shot, 5-shots and 6-shots





5-shots

IAS-LAB

100_0_0_20170112213500903.jpg.chip.jpg Group: 11, config: 0





















































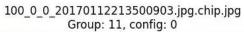




Some results

6-shots

IAS-LAB

























Group: 11, config: 2











Group: 11, config: 3











Group: 11, config: 4













Which dataset to use for test input?



UTKFace Align&Crop vs UTKFace into-the-wild

UTKFace Align&Crop vs UTKFace into-the-wild

Already aligned but with a	Can
different algorithm than JoJoGAN	algo

Can be align with the same algorithm of JoJoGAN

Recognizes multiple ethnicities

Lost some faces based on their ethnicity

Differences

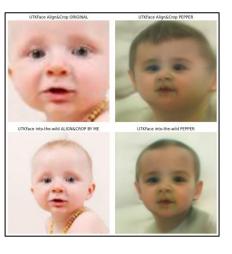
Examples

IAS-LAB



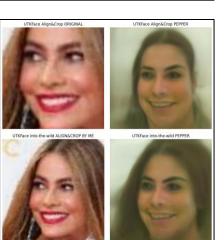
















UTKFace into-the-wild PEPPER





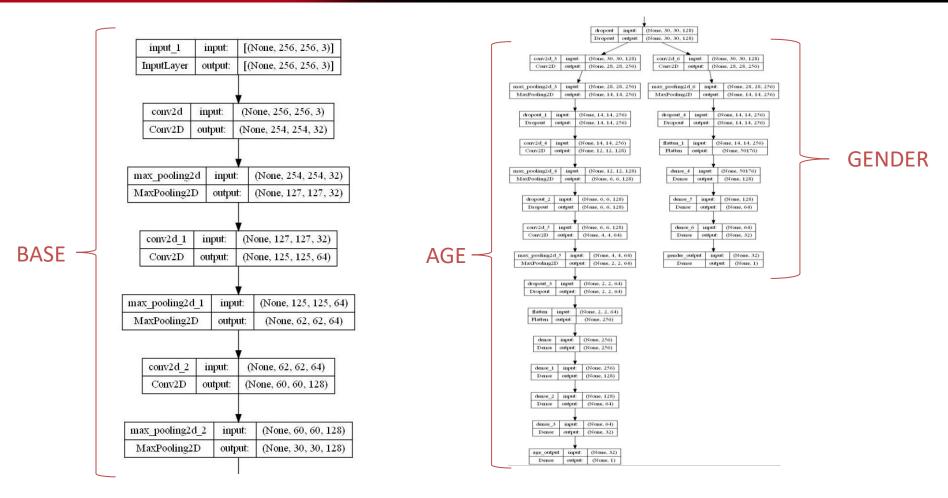




PREDICTION MODEL CNN

CNN MODEL

IAS-LAB

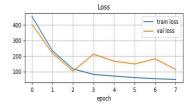




Age and gender

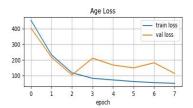
UTKFace Align&Crop

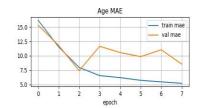
IAS-LAB

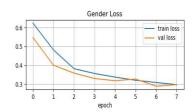


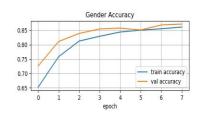
Precision on gender: 0.89 Precision on age: 0.97

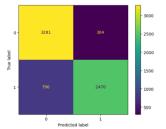
Recall on gender: 0.75 Recall on age: 0.92











Actual: Male, 50 Pred: Male, [32]



Actual: Female, 3 Pred: Male, [4]



Actual: Female, 23 Pred: Female, [17]



Actual: Male, 26 Pred: Male, [23]



Actual: Female, 50 Pred: Female, [56]



Actual: Male, 25 Pred: Male, [15]



Actual: Female, 2 Pred: Male, [3]



Actual: Male, 26 Pred: Male, [22]



Actual: Female, 3 Pred: Male, [4]

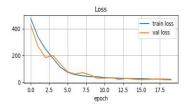




Age and gender

UTKFace into-the-wild

IAS-LAB



Age Loss

7.5 10.0

epoch

Gender Loss

7.5

0.0 2.5 5.0

0.0 2.5 5.0

— train loss

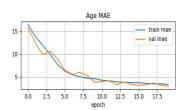
- train loss

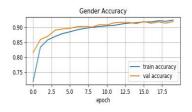
12.5 15.0 17.5

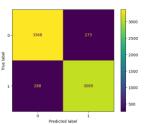
10.0 12.5 15.0 17.5

Precision on gender: 0.92 Precision on age: 0.97

Recall on gender: 0.91 Recall on age: 0.97







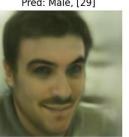
Actual: Male, 65 Pred: Male, [68]



Actual: Male, 4 Pred: Male, [3]



Actual: Male, 35 Pred: Male, [29]



Actual: Male, 1 Pred: Female, [2]



Actual: Female, 26 Pred: Female, [25]



Actual: Male, 34 Pred: Male, [37]



Actual: Male, 45 Pred: Male, [50]



Actual: Female, 26 Pred: Female, [26]

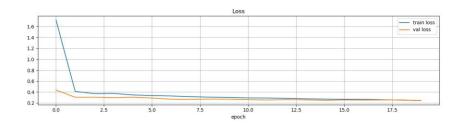


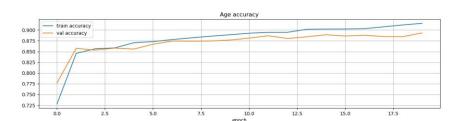
Actual: Female, 24 Pred: Female, [25]

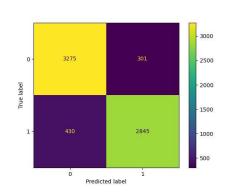


0: male

1: female







Precision: 0.90 Recall: 0.87



Actual: Male Pred: Male



Actual: Female Pred: Female



Actual: Female Pred: Female



Actual: Female Pred: Female



Actual: Male Pred: Male



Actual: Male Pred: Male



Actual: Female Pred: Female



Actual: Male Pred: Male



0.94

0.90

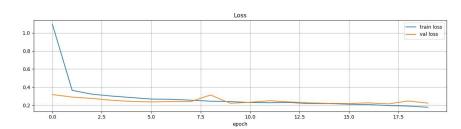
0.88

0.86 0.84 0.82 train accuracy val accuracy

IAS-LAB

0: male

1: female



Age accuracy

10.0

12.5

Precision: 0.93 Recall: 0.88



















Pred: Female

Actual: Female

3000 3437 2500 True label 2000 1500 2961 1000

Predicted label

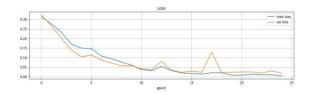
1

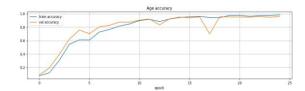
15.0

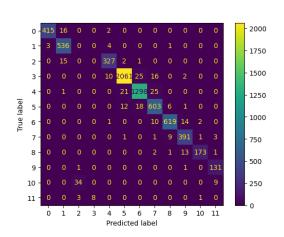
17.5

500









Precision: 0.99 Recall: 0.99





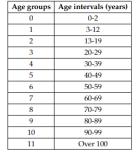












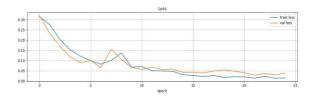


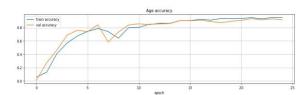
Actual: 4

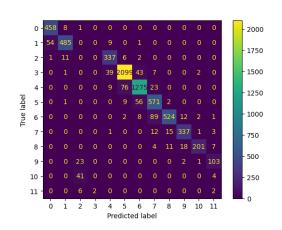












Precision: 0.99 Recall: 0.99



Actual: 3



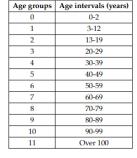


Pred: 8





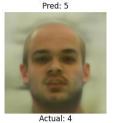






Actual: 3

Actual: 3







ON PEPPER PHOTOS

IAS-LAB

