

M.R.R. Project 2018

UTKFace
Age Prediction

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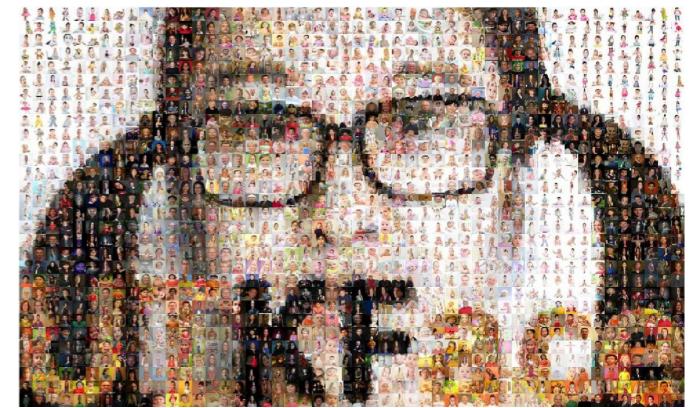
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PRESENTATION OF THE PROJECT

- **Goal : Estimation of the age of a person from an image**
- **Compute a model from all the images**
- **Large amount of variables**

THE DATASET

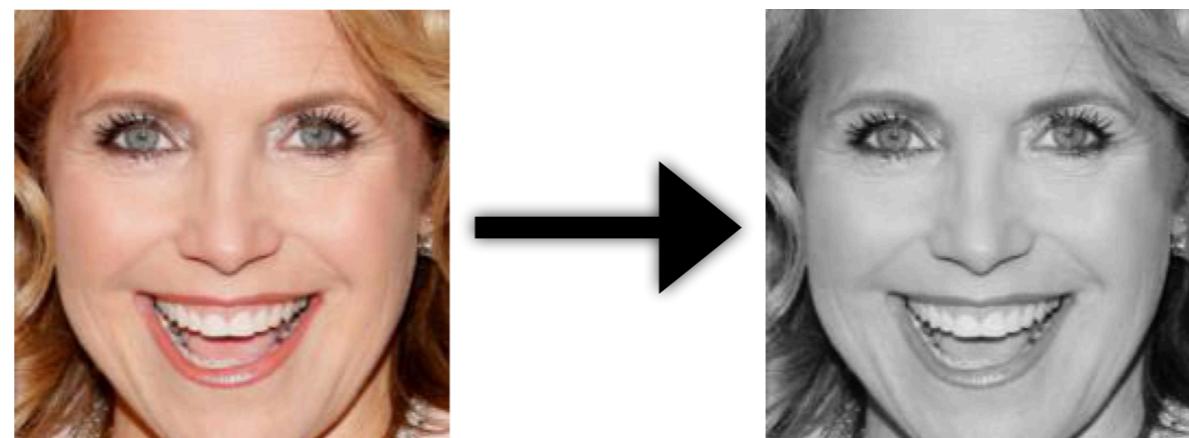


- Include 9778 face images in the wild (only single face in one image)
- All the faces images are aligned and cropped
- The variables :
 - * age : an integer between 0 and 116
 - * gender : 0 (male) or 1 (female)
 - * race : an integer from 0 to 4 (White, Black, Asian, Indian, and Others)
 - * 200x200 pixels (RGB color intensity level)

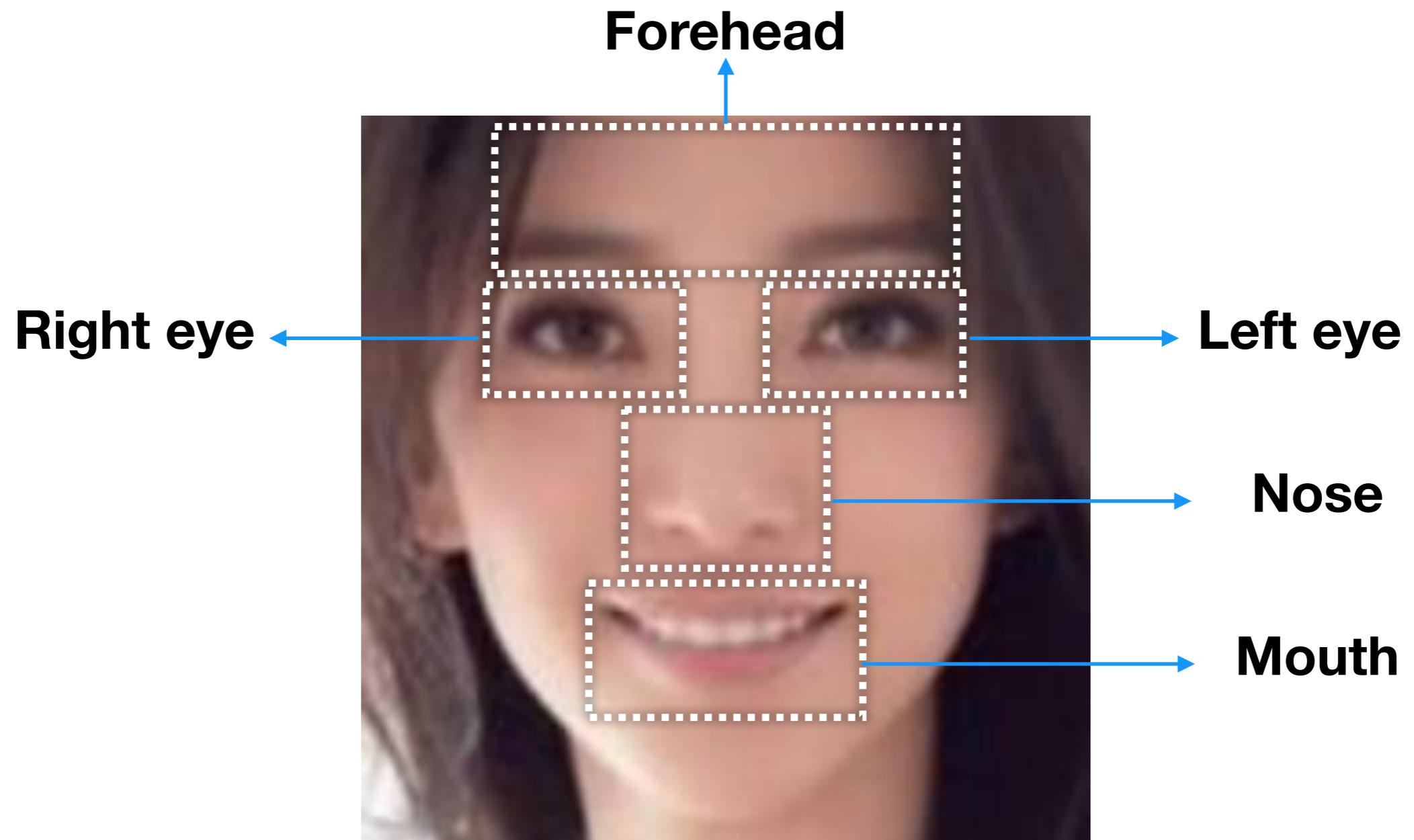


METHODOLOGY

- **PCA ?**
- **LINEAR MODEL or LOGISTIC MODEL**
- **RIDGE or LASSO**
- **K-FOLD Cross Validation**
- **Grayscale level instead of RGB level**



PARTS OF THE FACE



MODEL SELECTION

- **RIDGE REGRESSION**
- **K-Fold Cross Validation**
 - > 4 model for each part of face
- **The average of the age predicted by each model**

RIDGE REGRESSION

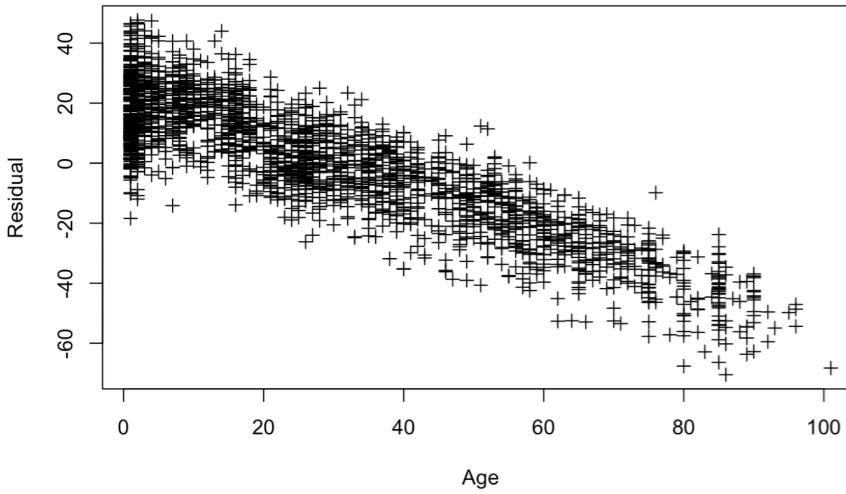
- Comparison between different models

	Linear Model	Ridge Regression
Nose	29.01	18.34
Forehead	31.12	21.54
Left Eye	24.24	18.56
Right Eye	22.18	17.76
Mouth	28.73	18.51

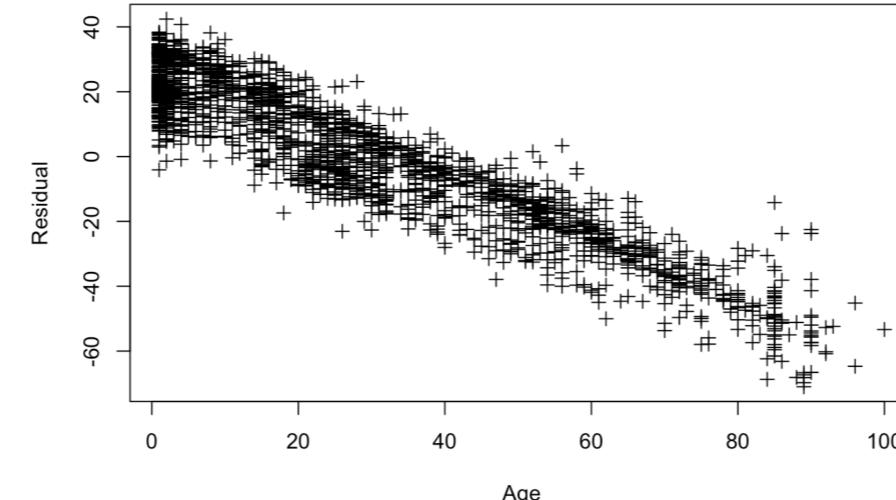
- For some parts, the minimum lambda is over 500
—> Hard penalty, underfitting

K-FOLD Cross Validation

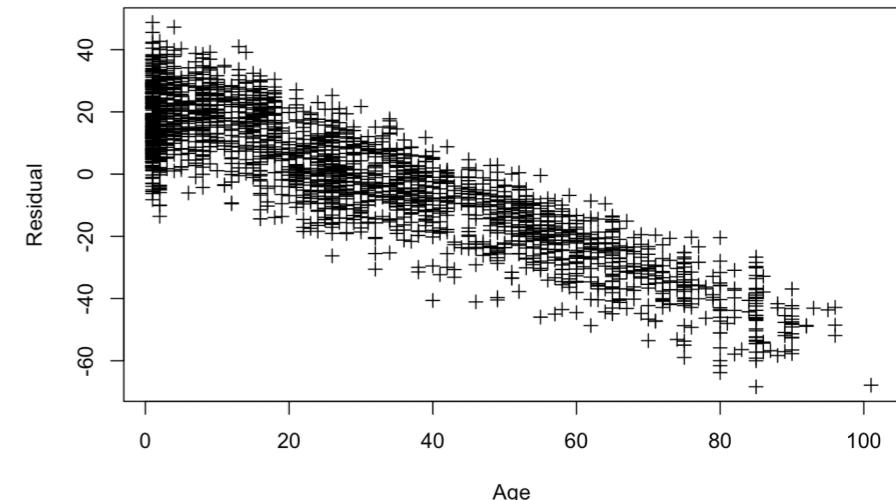
Residual Graph, Ridge, righteye Part



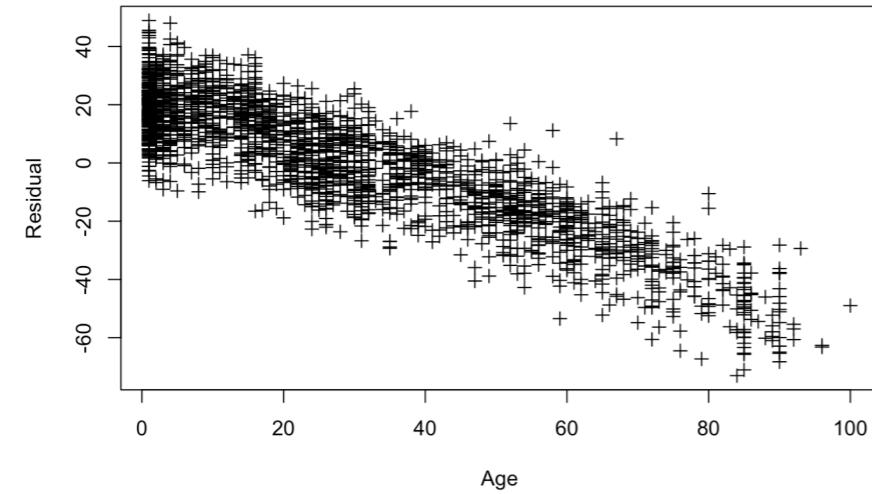
Residual Graph, Ridge, forehead Part



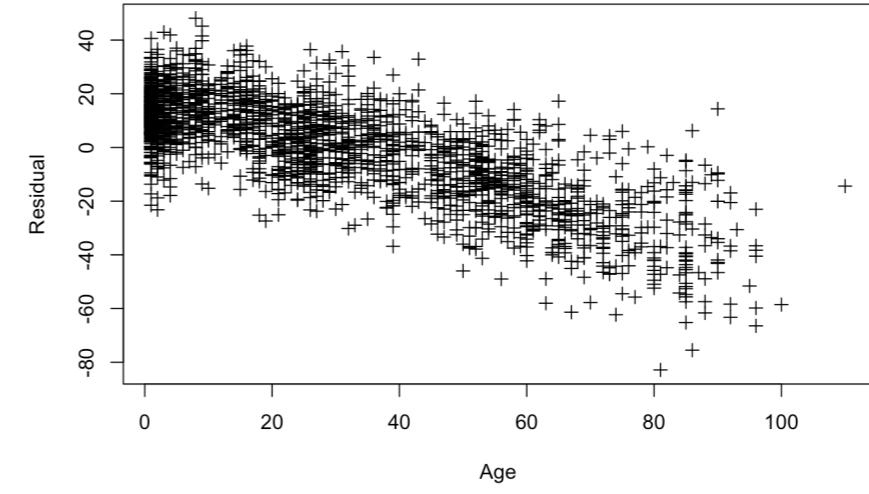
Residual Graph, Ridge, lefteye Part



Residual Graph, Ridge, mouth Part



Residual Graph, Ridge, Nose Part



$K = 4$

Nose

Forehead

Left eye

Right Eye

Mouth

RMSE

18.34

21.54

18.56

17.76

18.51

Test on friends' faces

	face1	face2	face3	face4
Real age	21	21	22	20
Gender	0	0	0	0
Race	3	0	2	0
Estimated age	15.05	36.45	26.67	27.29



CONCLUSION