

Age Estimation based on deep features and age grouping

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1 Team details

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2 Contribution details

- Title of the contribution
Age Estimation based on deep features and age grouping
- Final score

- General method description

The method first uses multiple googlenet deep networks, which are trained on facial images with age label. Then the data provided from this challenge is processed using data augmentation. The deep network is then fine-tuned using augmented competition data and the feature vectors from deep networks are extracted. Age grouping is further applied so that each image is can be classified into one of ten age groups. Within each age group, Random Forest and SVR are used to train the age estimator. Score level fusion is applied to fuse all the predictions to get the final result.

- References
- Representative image / diagram of the method
- Describe data preprocessing techniques applied (if any)

Images are firstly applied face detection using two face detection api: Face++ and MS Project Oxford. Face images are then cropped and aligned with same size and eye locations. Training images are then applied to our data augmentation process (add slight rotation, shifting, and noise).

3 Face Detection Stage

3.1 Features / Data representation

None

3.2 Dimensionality reduction

None

3.3 Compositional model

None

3.4 Learning strategy

None

3.5 Other techniques

Detection is applied using face detection api: Face++ and MS Project Oxford

3.6 Method complexity

N/A

4 Face Landmarks Detection Stage

4.1 Features / Data representation

None

4.2 Dimensionality reduction

None

4.3 Compositional model

None

4.4 Learning strategy

None

4.5 Other techniques

Landmark Detection is applied using face detection api: Face++ and MS Project Oxford

4.6 Method complexity

N/A

5 Apparent Age Estimation Stage

5.1 Features / Data representation

Deep features from fine-tuned googlenet are extracted.

5.2 Dimensionality reduction

None

5.3 Compositional model

Deep feature + Age grouping + Random Forest/SVR + Score Level Fusion

5.4 Learning strategy

Deep learning, Random Forest, and SVR

5.5 Other techniques

Score level fusion is applied on multiple deep features, using RF and SVR.

5.6 Method complexity

6 Global Method Description

- Total method complexity: all stages
- Which pre-trained or external methods have been used (for any stage, if any)
This method uses our pre-trained deep network (googlenet) using external age data. The competition data is fine-tuned based on our deep model.
- Which additional data has been used in addition to the provided ChaLearn training and validation data (at any stage, if any):
This method uses about 240,000 face images with age labels for training deep network.
- Qualitative advantages of the proposed solution
 1. Simple method.
 2. Easy to implement.
- Results of the comparison to other approaches (if any)
- Novelty degree of the solution and if it has been previously published

7 Other details

- Language and implementation details (including platform, memory, parallelization requirements)
 1. Platform: Ubuntu 14.04
 2. Language: Python, Matlab, Linux Shell
 3. Memory: $\leq 32\text{G}$
 4. Other requirement: Multi-processor machine, machine with GPU
- Human effort required for implementation, training and validation?
A few man days
- Training/testing expended time?
A few days

- General comments and impressions of the challenge? what do you expect from a new challenge in face and looking at people analysis?

Generally the challenge is very good. It is better if participants can receive more notification emails for either confirmation or any other important update and announcement.