北京郵電大學
BEIJING UNIVERSITY OF POSTS AND TELECOMMUNICATIONS

BUPT-MCPRL@TRECVID 2016: Instance Search

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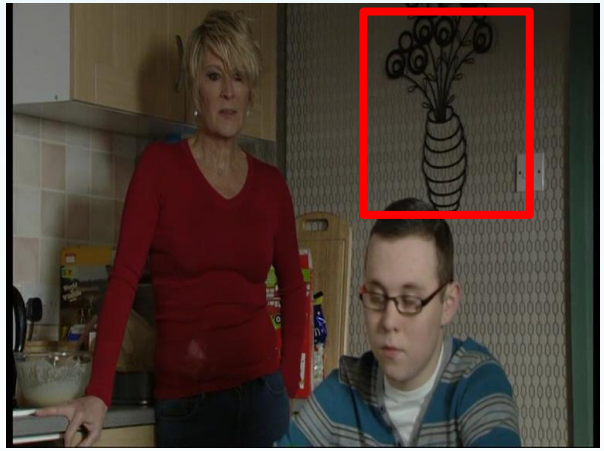
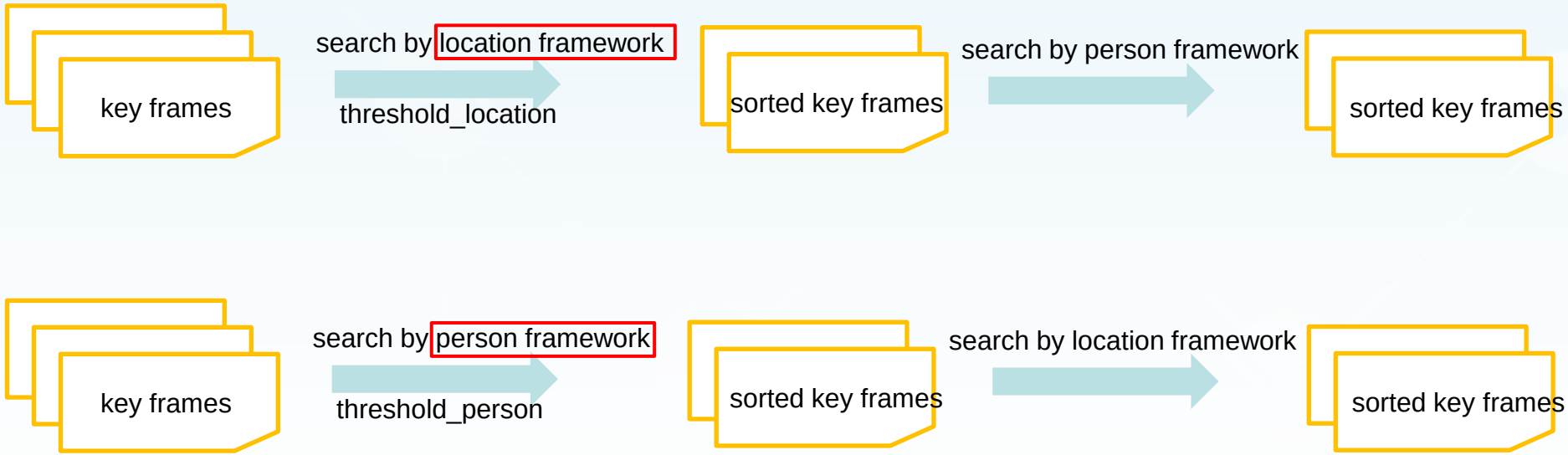
Content

- Retrieval framework and methods
- Experiment and evaluation results
- Future works

New query type

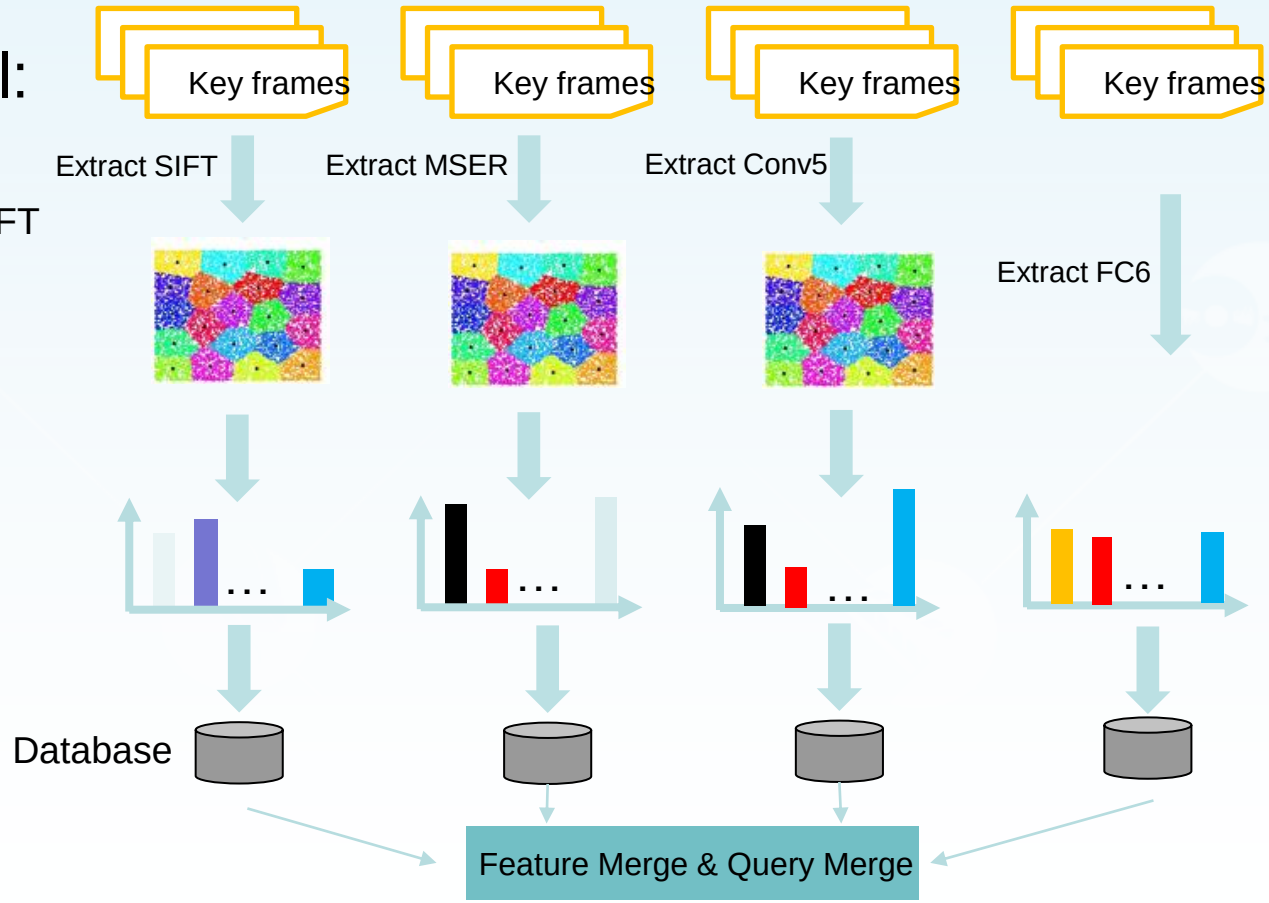


Basic framework:
retrieving specific person in specific location



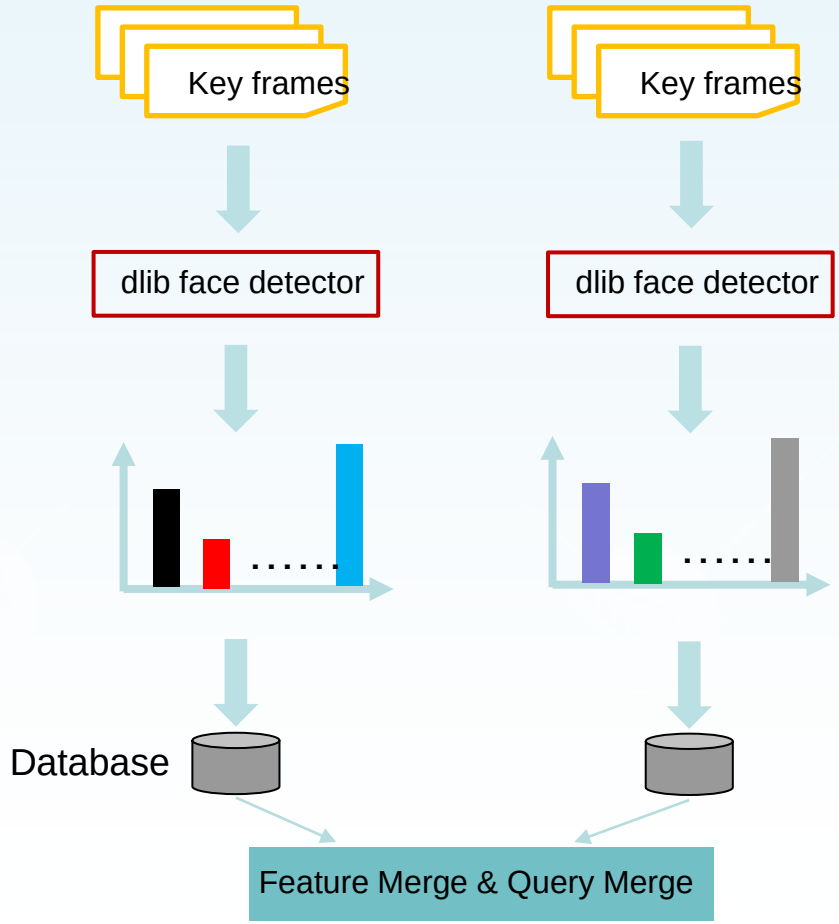
Location retrieval overview

- For location retrieval:
  - Three local features
    - Hessian Affine + RootSIFT
    - MSER + RootSIFT
    - Deep Conv5
  - One global feature
    - Deep FC6
  - Feature fusion
    - Manual tuned
    - Query adaptive

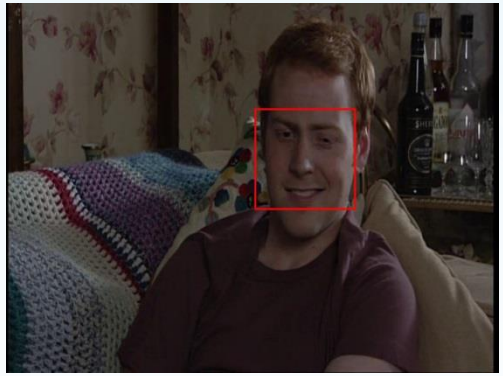


Person retrieval overview

- For person retrieval:
  - One person detect method
    - Dlib
  - Two global feature
    - VGG-Face feature
    - Openface feature
  - Feature fusion
    - Query adaptive



Person retrieval: face detection by dlib



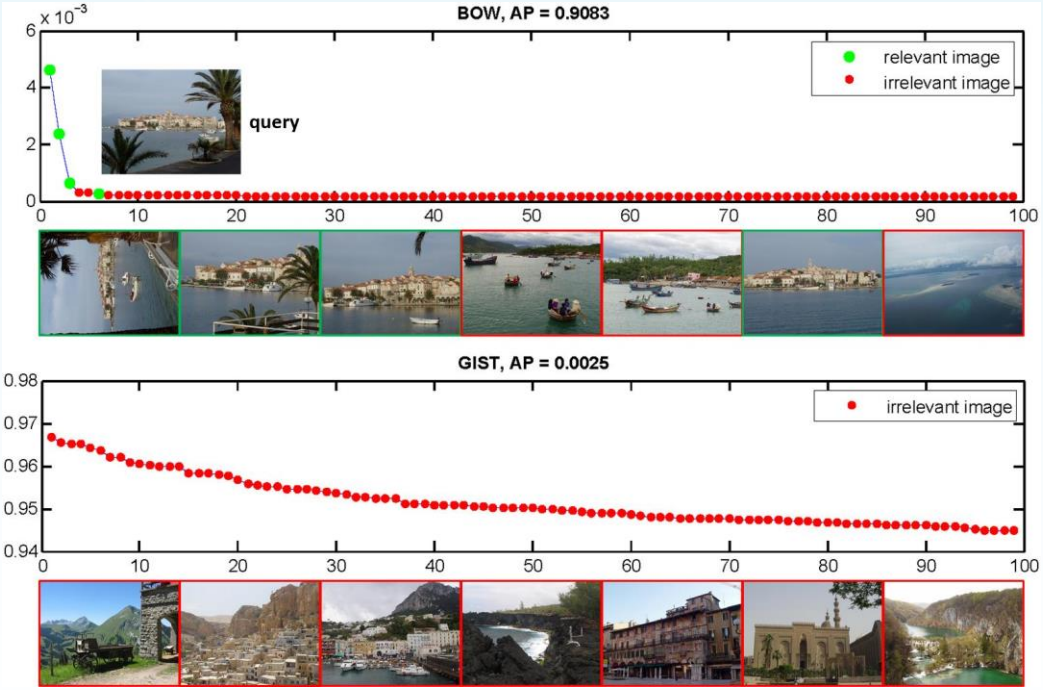
Person retrieval: face features by CNN

The VGG-Face CNN descriptors (512-dimension) are computed using CNN implementation based on the VGG-Very-Deep-16 CNN architecture.

Use a deep neural network(provided by openface) to represent the face on a 128-dimensional unit hypersphere.

Person retrieval: multiple face features fusion

Person retrieval: multiple face features fusion



Good feature:
L-shaped score curve

Bad Feature:
Flat score curve

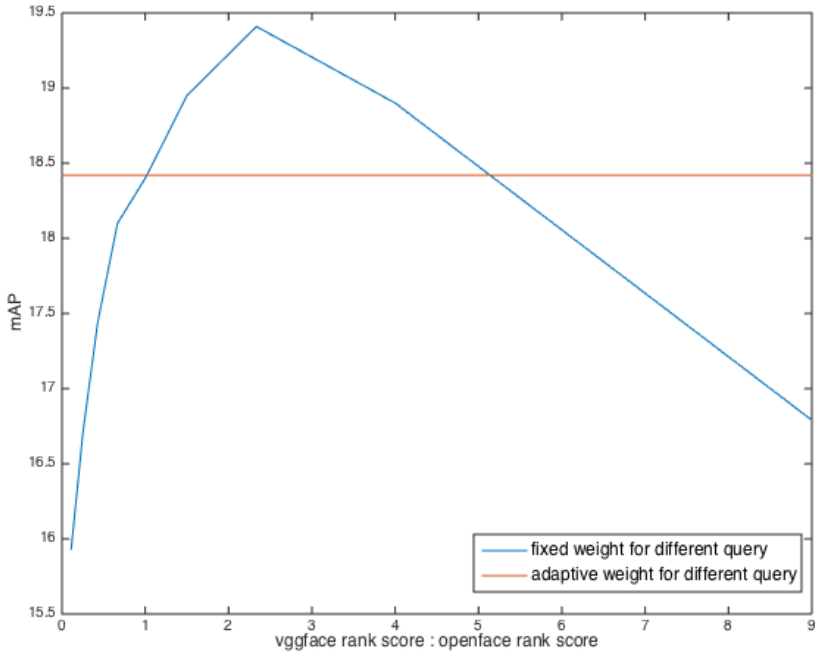
Courtesy: Query-Adaptive Late Fusion for Image Search and Person Re-identification, CVPR2015

Person retrieval: multiple face features fusion

person name	weight vgg-face	weight openface
brad	0.581	0.419
dot	0.621	0.379
fatboy	0.528	0.472
jim	0.628	0.372
pat	0.457	0.543
patrick	0.661	0.339
stacey	0.481	0.519

Feature for person retrieval	mAP (2016)
vggface	11.0
openface	14.9
vggface + openfaces adaptive	18.4

Multiple face feature fusion:
query-adaptive v.s fixed weight

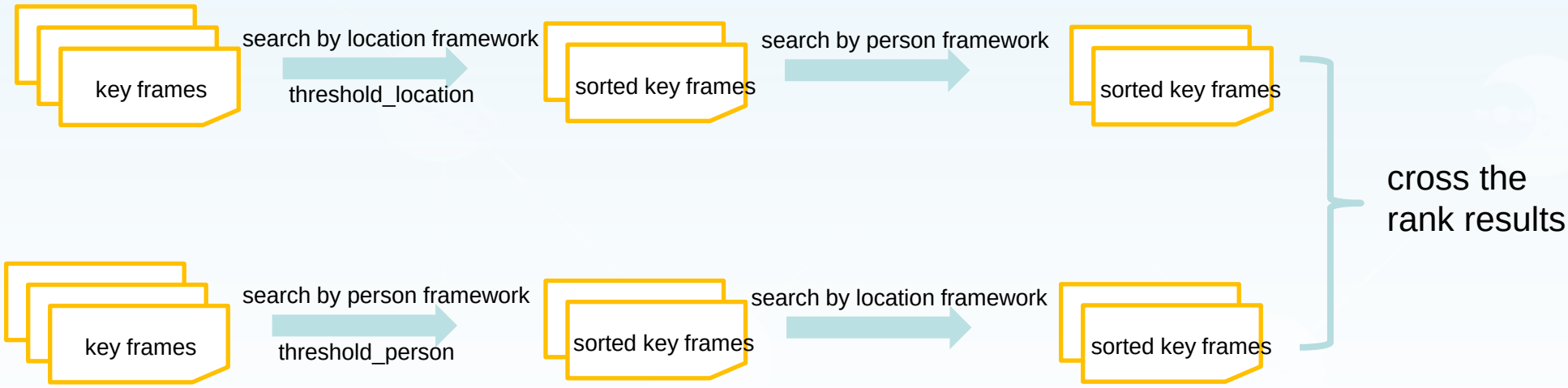


Evaluation of mAP for fixed weight and query-adaptive weight of vgg_face and open_face rank score

Person retrieval:
query expansion and multiple query fusion

Query expansion

Basic framework fusion:
retrieving specific person in specific location



Evaluation results

Method	mAP (2016)
First retrieve location + Second retrieve person	18.6
First retrieve person + Second retrieve location	19.4
Merge results of two orders above	23.0
Interactive	28.5

Future works

Explore better CNN architecture to obtain better features for an image.

Find better ways to detect and describe person since face detector does not work on some side face or person backside.

Explore better ways to combine person and location information at the same time.

Thank You !

http://bupt-mcprl.net/

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