Recognize Complex Events from Static Images by Fusing Deep Channels
Supplementary Materials

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1. Model Specification

Our model is implemented on Caffe [1]. It is a common programming framework for deep learning. The detailed specification of the model can be downloaded from the project website `http://personal.ie.cuhk.edu.hk/~xy012/event_recog`. It can be read by Caffe and edited with any text editor.

2. WIDER Dataset

The dataset can be downloaded from the project website `http://personal.ie.cuhk.edu.hk/~xy012/event_recog/WIDER`.

3. Parameters of Compared Methods

We compared our method with three different methods. The detailed settings of their parameters are described below.

Gist   We use the implementation described in [4]. Images are resized to 128×128. The orientation scales are $(8, 8, 8, 8)$.

Spatial Pyramid Matching (SPM)   The implementation of spatial pyramid matching algorithm is based on [2]. We use pyramids of three levels. The low-level visual features are characterized by SIFT descriptors. These features are encoded with a codebook of 1500 visual terms.

RCNNBank   The RCNNBank is implemented based on ObjectBank [3], except that the detector responses are replaced by the activation features obtained using CNN. For each image, we first obtain 500 bounding boxes with highest proposal scores and apply the CNN to derive action features. This results in 500 activation feature vectors of 4096 dimensions. Then we splice the image into evenly spaced regions of size 3×3. The activation features are accumulated to the corresponding regions according to the positions of the bounding boxs. Finally, we get a representation of $4096 \times 9 = 36864$ dimensions.

4. Dataset Examples

Figure 1, 2, 3, 4, 5, and 6 present sample images of the WIDER dataset, five for each class. Note we resized all images to squares for consistent layout.

References

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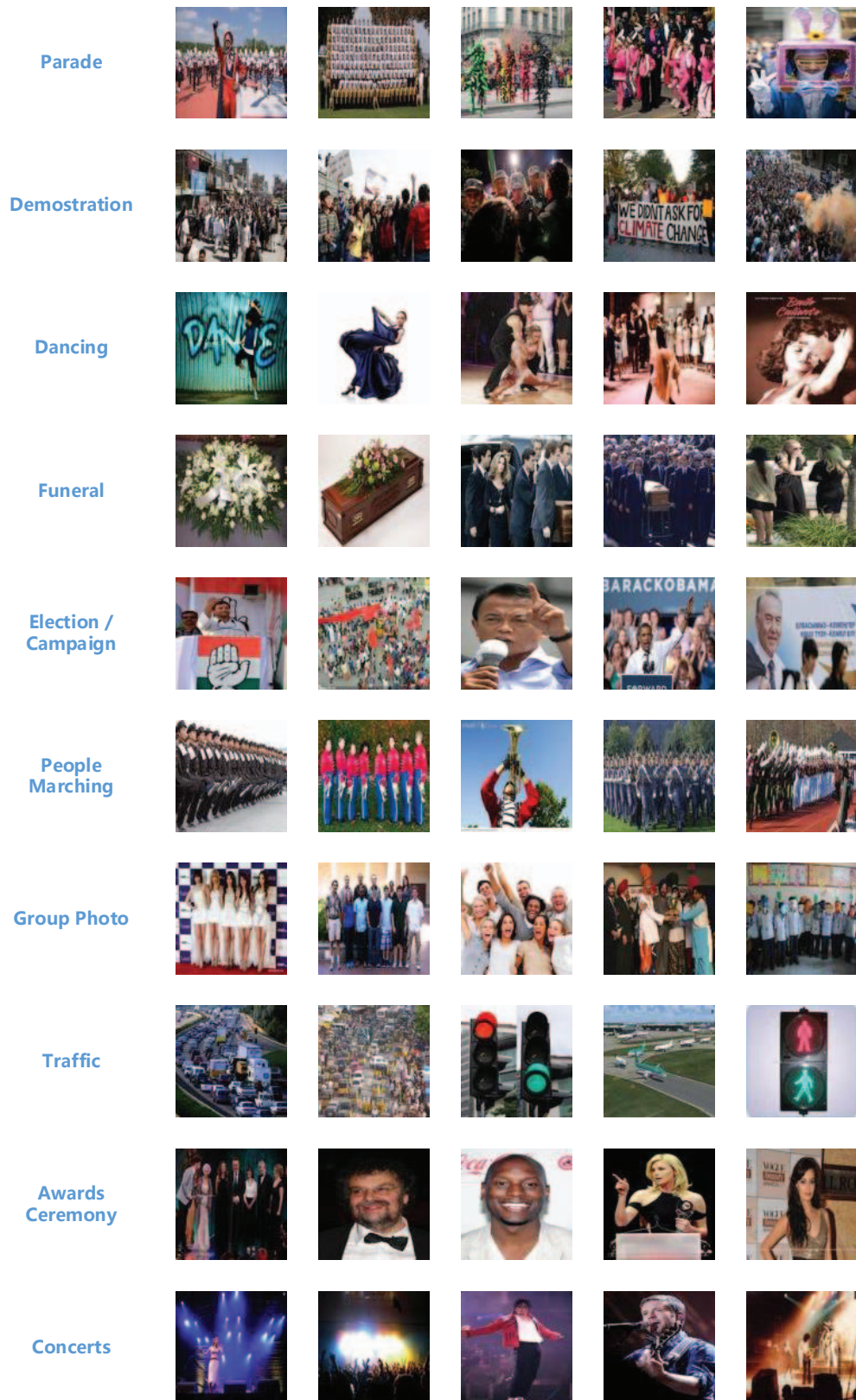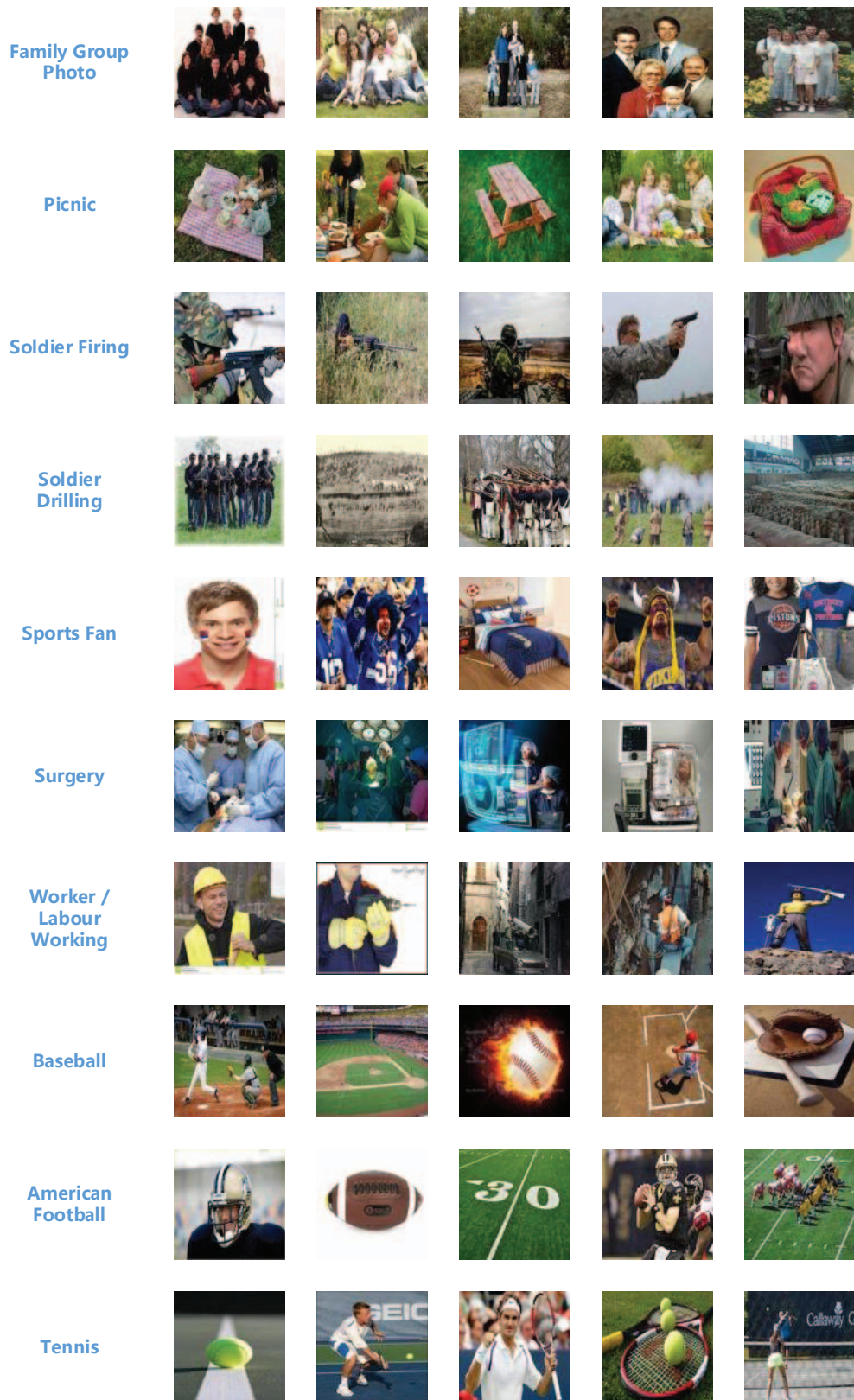
Parade

Demostration

Dancing

Funeral

Election / Campaign

People Marching

Group Photo

Traffic

Awards Ceremony

Concerts

Figure 1: Sample images in the dataset.

Figure 2: Sample images in the dataset.

Gymnastics

Car Racing

Aerobics

Jockey

Parachuting

Celebration / Party

Photographing
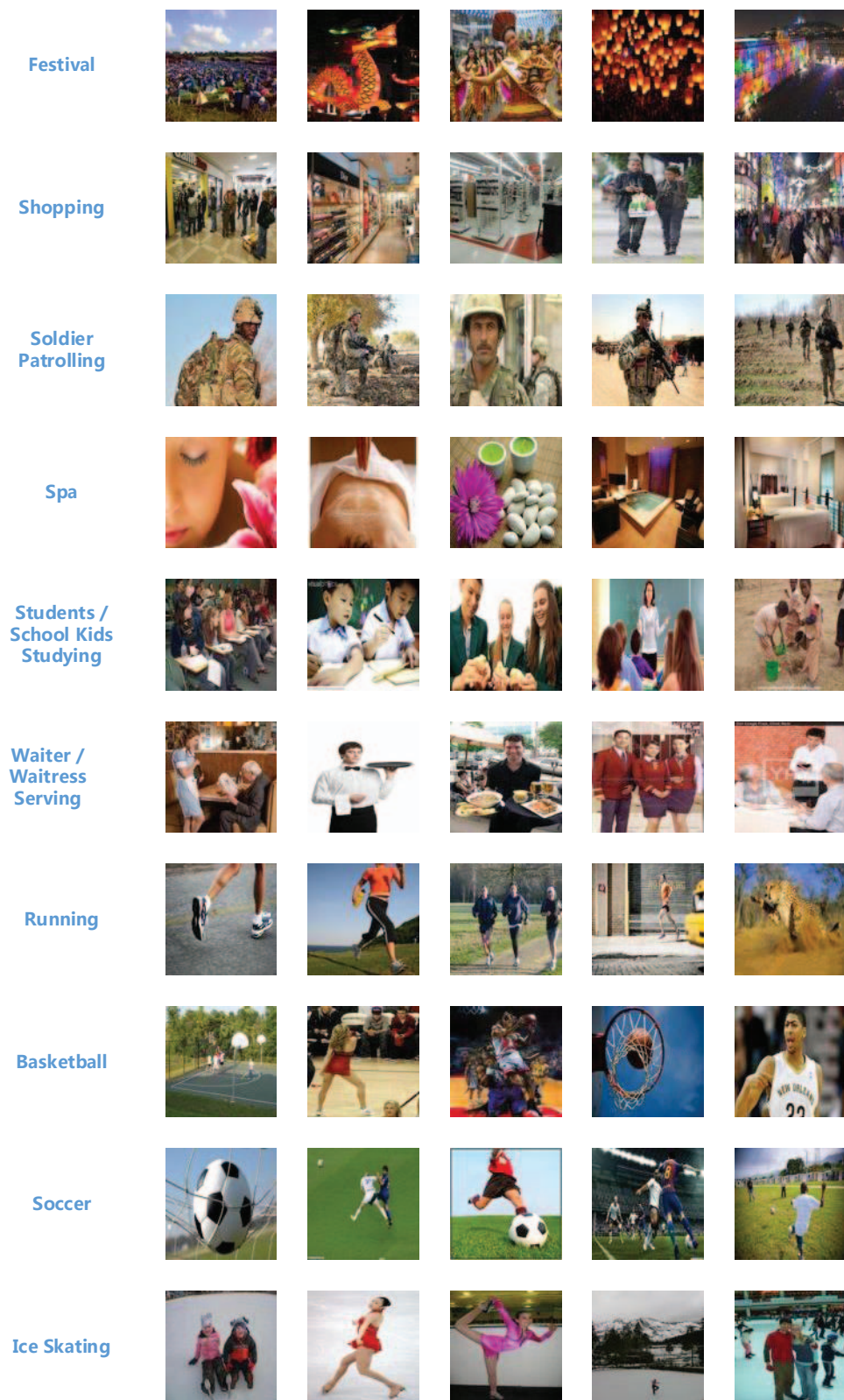
Rescue

Voting

Ice Hockey

Figure 3: Sample images in the dataset.

Figure 4: Sample images in the dataset.

Festival

Shopping

Soldier Patrolling

Spa

Students / School Kids Studying

Waiter / Waitress Serving

Running

Basketball

Soccer

Ice Skating

Figure 5: Sample images in the dataset.

Swimming

Boat Rowing

Ballooning

Bullfighting

Greeting

Dresses / Wearing Dress

Raid

Sports Coaching

Angler / Fishing

Driving

Figure 6: Sample images in the dataset.