Hashtag recommendation

資工四 林承豫 戴培倫
網媒一 蔡侑霖

Abstract

We recommend user corresponding hashtags according to the input images.

The system can predict the hashtag according to user’s previous choice

That is, different choice would result different hashtag recommended from system

Dataset

The dataset was self-collected from Instagram.

It contains 57000 images with a few hashtags as a pair.

There are roughly 1000 different hashtags.

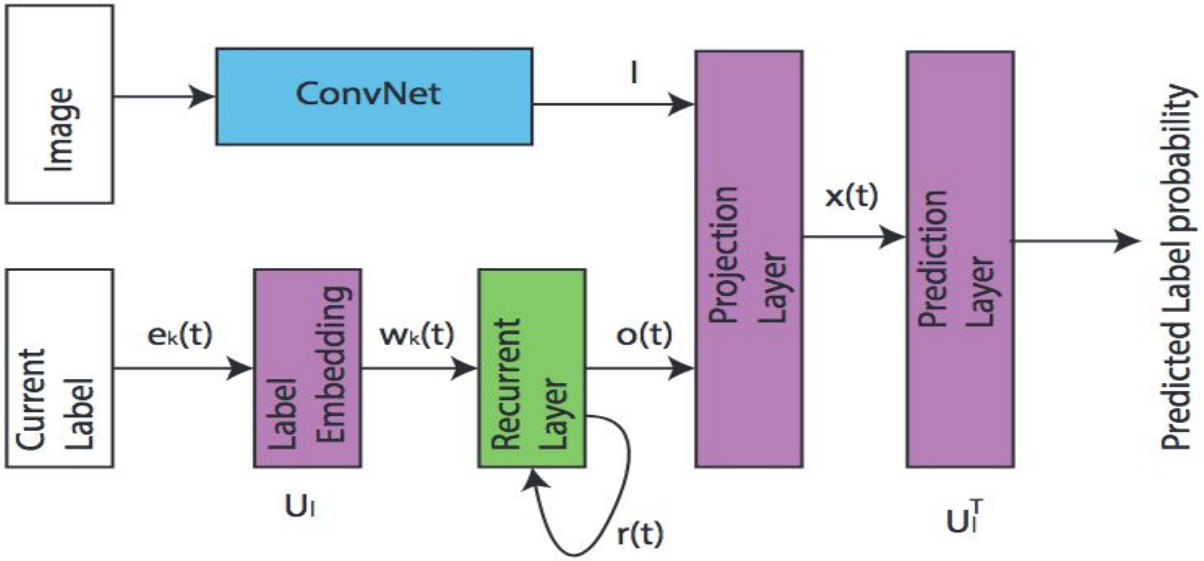
Model structure

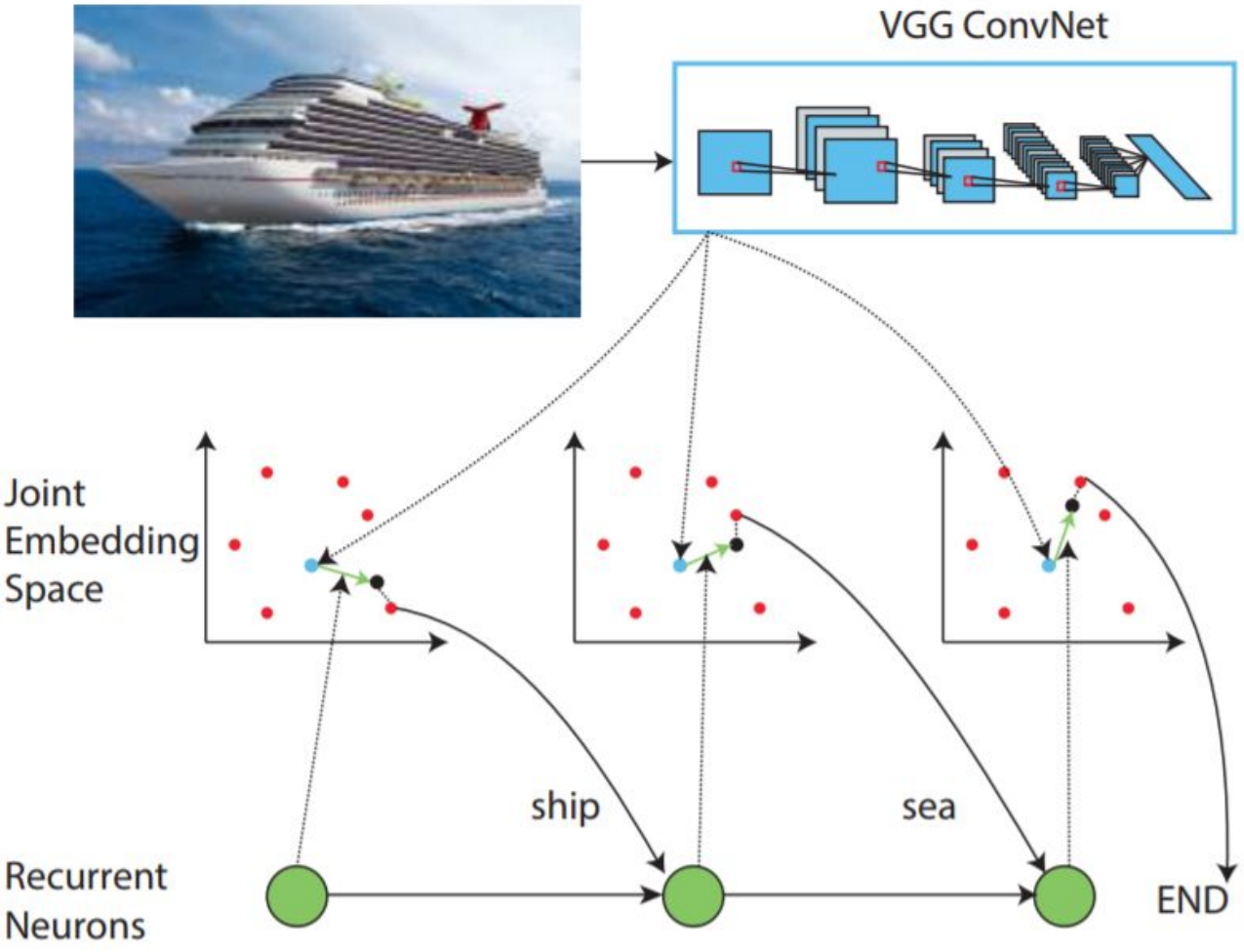
We implement the model structure from the following paper

CNN-RNN: A Unified Framework for Multi-label Image Classification

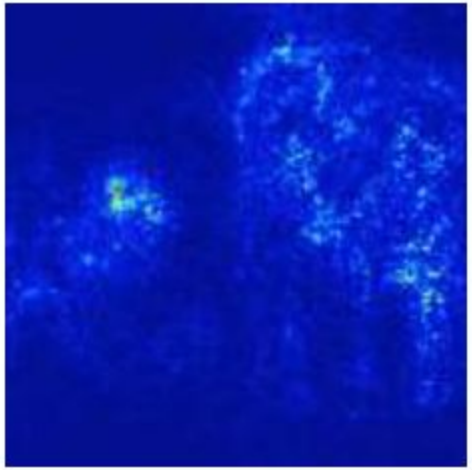
Images and tags were projected to a shared latent space

Model structure

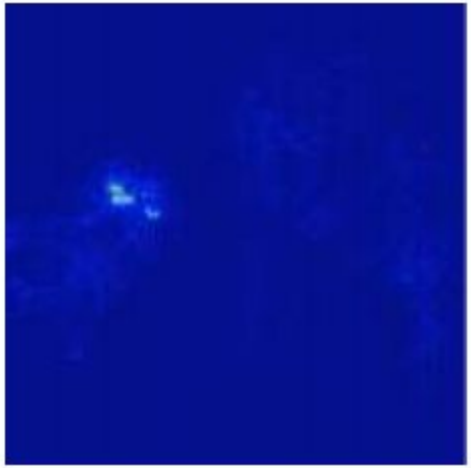



VGG ConvNet
Joint
Embedding
Space
ship
sea
Recurrent
Neurons
END

Original Image



Initial Attention



Attention after first word

Figure 10. The attentional visualization for the RNN multi-label framework. This image has two ground-truth labels: "elephant" and "zebra". The bottom-left image shows the framework's attention in the beginning, and the bottom-right image shows its attention after predicting "elephant".

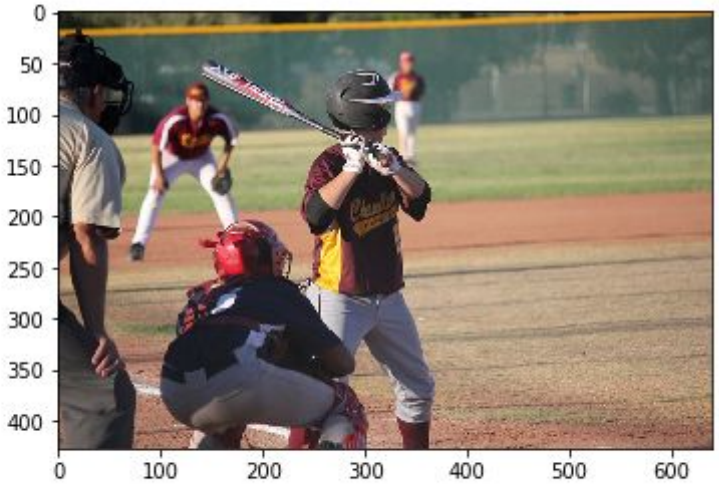
Advantages

By adapting this model structure, an user interactive system can be implemented

RNN stores the previous information so that all hashtag recommended will be correlated

Result

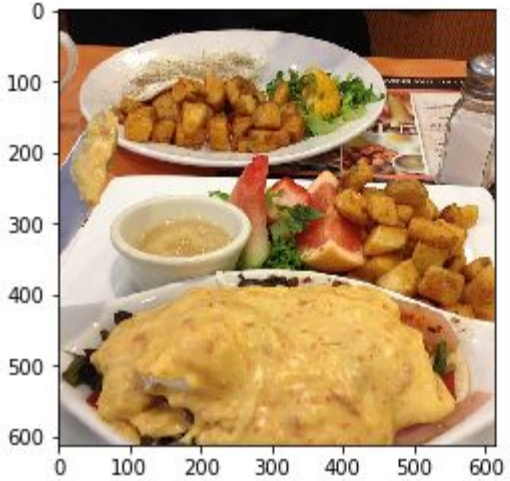
```
('chair', 'furniture')
('baseball glove', 'sports')
('bench', 'outdoor')
('airplane', 'vehicle')
('kite', 'sports')
('bird', 'animal')
('boat', 'vehicle')
('baseball bat', 'sports')
('umbrella', 'accessory')
--------------------------------------------------
```




```
('person', 'person')
('boat', 'vehicle')
('chair', 'furniture')
('surfboard', 'sports')
('kite', 'sports')
('handbag', 'accessory')
('bird', 'animal')
('dining table', 'furniture')
('bottle', 'kitchen')
('baseball glove', 'sports')
--------------------------------------------------
```

```
('car', 'vehicle')
('chair', 'furniture')
('traffic light', 'outdoor')
('<END>', '<END>')
('truck', 'vehicle')
('handbag', 'accessory')
('motorcycle', 'vehicle')
('kite', 'sports')
('bus', 'vehicle')
('backpack', 'accessory')
--------------------------------------------------
```


```
('dining table', 'furniture')
('fork', 'kitchen')
('chair', 'furniture')
('carrot', 'food')
('cup', 'kitchen')
('broccoli', 'food')
('knife', 'kitchen')
('person', 'person')
('cake', 'food')
('apple', 'food')
--------------------------------------------------
```



family
dog
girl
love
life
smile
beautiful
happy
followme
instadaily
instagood

family
black
love
nature
life
girl
beautiful
happy
followme
instagood
follow

Cognitive Computing Final Demo

upload image

predict image

#summer
#vscocam
#photooftheday
#beach
#exercise
#happiness

Add

Future Works

- Fully reproduce the paper
- Data augmentation
    - Hashtag clustering
    - Add similar hashtags
- Data imbalance
    - Focal loss