## Homework 2

- We will provide some research topics and corresponding paper lists, each student need to choose one paper and submit a reading report no more than 3 pages.
- You can choose a paper in the lists provided, or any other topic that you are interested in (need to submit the detailed information of the paper you choose, *e.g.*, BibTex format).
- You should briefly explain the problem the paper is working on, their major contributions and the proposed solutions.
- Your own understanding of the contributions and the unsolved problems of the paper are welcomed in the report.

#### **Topic 1: Action Recognition**

- 1. Making the Invisible Visible: Action Recognition Through Walls and Occlusions
- 2. STM: Spatio-Temporal and Motion Encoding for Action Recognition
- 3. Action Recognition With Spatial-Temporal Discriminative Filter Banks
- 4. EPIC-Fusion: Audio-Visual Temporal Binding for Egocentric Action Recognition
- 5. Grouped Spatial-Temporal Aggregation for Efficient Action Recognition
- 6. Generative Multi-View Human Action Recognition
- 7. SCSampler: Sampling Salient Clips From Video for Efficient Action Recognition
- 8. Bayesian Graph Convolution LSTM for Skeleton Based Action Recognition
- 9. Hallucinating IDT Descriptors and I3D Optical Flow Features for Action Recognition With CNNs
- 10. DMC-Net: Generating Discriminative Motion Cues for Fast Compressed Video Action Recognition
- 11. Actional-Structural Graph Convolutional Networks for Skeleton-Based Action Recognition
- 12. Bayesian Hierarchical Dynamic Model for Human Action Recognition
- 13. Collaborative Spatiotemporal Feature Learning for Video Action Recognition
- 14. Skeleton-Based Action Recognition With Directed Graph Neural Networks
- 15. Representation Flow for Action Recognition
- 16. LSTA: Long Short-Term Attention for Egocentric Action Recognition
- 17. Two-Stream Adaptive Graph Convolutional Networks for Skeleton-Based Action Recognition
- 18. Large-Scale Weakly-Supervised Pre-Training for Video Action Recognition
- 19. ...

#### **Topic 2: Object Detection**

- 1. Libra R-CNN: Towards Balanced Learning for Object Detection
- 2. Feature Selective Anchor-Free Module for Single-Shot Object Detection
- 3. Bottom-Up Object Detection by Grouping Extreme and Center Points
- 4. Unsupervised Moving Object Detection via Contextual Information Separation
- 5. GS3D: An Efficient 3D Object Detection Framework for Autonomous Driving
- 6. Deep Fitting Degree Scoring Network for Monocular 3D Object Detection
- 7. Salient Object Detection With Pyramid Attention and Salient Edges
- 8. Attentive Feedback Network for Boundary-Aware Salient Object Detection
- 9. C-MIL: Continuation Multiple Instance Learning for Weakly Supervised Object Detection
- 10. Towards Adversarially Robust Object Detection
- 11. A Robust Learning Approach to Domain Adaptive Object Detection
- 12. A Delay Metric for Video Object Detection: What Average Precision Fails to Tell
- 13. Delving Into Robust Object Detection From Unmanned Aerial Vehicles: A Deep Nuisance Disentanglement Approach
- 14. Employing Deep Part-Object Relationships for Salient Object Detection
- 15. Transferable Semi-Supervised 3D Object Detection From RGB-D Data
- 16. Learning Rich Features at High-Speed for Single-Shot Object Detection
- 17. Disentangling Monocular 3D Object Detection
- 18. Structured Modeling of Joint Deep Feature and Prediction Refinement for Salient Object Detection
- 19. ...

### **Topic 3: Object Segmentation**

- 1. Patchwork: A Patch-Wise Attention Network for Efficient Object Detection and Segmentation in Video Streams
- 2. MHP-VOS: Multiple Hypotheses Propagation for Video Object Segmentation
- 3. Spatiotemporal CNN for Video Object Segmentation
- 4. Learning Unsupervised Video Object Segmentation Through Visual Attention
- 5. SAIL-VOS: Semantic Amodal Instance Level Video Object Segmentation A Synthetic Dataset and Baselines
- 6. See More, Know More: Unsupervised Video Object Segmentation With Co-Attention Siamese Networks
- 7. Fast User-Guided Video Object Segmentation by Interaction-And-Propagation Networks
- 8. RVOS: End-To-End Recurrent Network for Video Object Segmentation
- 9. ZigZagNet: Fusing Top-Down and Bottom-Up Context for Object Segmentation
- 10. BubbleNets: Learning to Select the Guidance Frame in Video Object Segmentation by Deep Sorting Frames
- 11. Convex Shape Prior for Multi-Object Segmentation Using a Single Level Set Function
- 12. Anchor Diffusion for Unsupervised Video Object Segmentation
- 13. TensorMask: A Foundation for Dense Object Segmentation
- 14. DMM-Net: Differentiable Mask-Matching Network for Video Object Segmentation
- 15. AGSS-VOS: Attention Guided Single-Shot Video Object Segmentation
- 16. RANet: Ranking Attention Network for Fast Video Object Segmentation
- 17. Fast Video Object Segmentation via Dynamic Targeting Network
- 18. Capsule VOS: Semi-Supervised Video Object Segmentation Using Capsule Routing
- 19. ...

# Any other topic which is relevant to deep learning ...

Need to provide the detailed information of the paper you choose, e.g., BibTex format:

```
@InProceedings{
author = {Huang, Yan and Wu, Qi and Song, Chunfeng and Wang, Liang},
title = {Learning Semantic Concepts and Order for Image and Sentence Matching},
booktitle = {The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)},
year = {2018}
```