

Yucheng Han

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EDUCATION

Tsinghua University

B.Eng. in Automation (GPA: 3.77/4.00, Ranking:33/168)

Beijing, China

expected in Jul. 2021

Computer Science: Computer Principles and Applications (4.0), Data Structures (4.0), Computer Networks and Applications (4.0), C++ Program Design and Training (4.0)

Math and Physics: Calculus (A) (I & II) (both 4.0), Linear Algebra (I & II) (both 3.6), Physics (B) (I & II) (both 4.0), Introduction to Complex Analysis (4.0), Probability and Statistics (4.0)

RESEARCH EXPERIENCES

Fast AdvProp for Practical Boost in Classification Accuracy

Jun. 2020 – Present

Computational Cognition, Vision, and Learning (CCVL) Lab, Johns Hopkins University *advised by Prof. Alan Yuille*

- Reimplemented AdvProp using PyTorch; made the code open source.
- Combined the gradient recycle and the universal adversarial perturbation techniques with AdvProp; observed 50% acceleration with a minor drop in accuracy.
- Based on experiments, hypothesized that minor accuracy drop was due to weak adversary; trying feature-level adversarial attack to resolve this problem.

Hierarchical Graph with Relation Reduction for Video Summarization

Aug. 2019 – Mar. 2020

Intelligent Vision Group, Tsinghua University

advised by Prof. Jiwen Lu

- Designed a new video summarization method to extract the spatial-temporal representations by building a hierarchical graph and applying graph convolution and our proposed graph pooling module.
- Exceeded previous state-of-the-art method by 2.1% on SumMe dataset and 1.6% on TVSum dataset.
- Submitted to IEEE Transactions on Image Processing (TIP).

Learning Multiscale Hierarchical Attention for Video Summarization

Mar. 2019 – Jul. 2019

Intelligent Vision Group, Tsinghua University

advised by Prof. Jiwen Lu

- Designed a multiscale hierarchical attention model for video summarization which pays different attention to video frames and blocks for extracting the multiscale features.
- Benchmarked the proposed attention model on the task of video summarization (as well as a variant of the attention model that was combined with optical flow) and improved the performance on SumMe and TVSum by 1.4% (1.7%) and 0.4% (0.9%), respectively.
- Submitted to Pattern Recognition (PR).

MANUSCRIPTS

[1] Wencheng Zhu, Jiwen Lu, **Yucheng Han**, and Jie Zhou. Learning Multiscale Hierarchical Attention for Video Summarization. *Pattern Recognition* (under review)

[2] Wencheng Zhu, **Yucheng Han**, Jiwen Lu and Jie Zhou. Relational Reasoning over Spatial-Temporal Graphs for Video Summarization. *IEEE Transactions on Image Processing* (under review)

AWARDS & HONORS

Academic Excellence Award (28/174 in the Department of Automation)

Oct. 2019

Philobiblion Scholarship (Awarded for reading in width and in depth)

Oct. 2019

First Prize in China College Physics Competition (Top 1%) in Dec. 2018

Dec. 2018

Silver Medal in 33th National Physics Olympiad. (Top 0.001%)

Oct. 2016

STANDARDIZED TESTS

TOEFL iBT: Total 105/120 (Reading 30, Listening 26, Speaking 24, Writing 25)

GRE: Verbal 158/170, Quantitative 170/170, Analytical Writing 4.0/6.0