

YAN HAO

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RESEARCH INTERESTS

Computer Vision(Video, 3D Vision combined with Robotics), Deep Learning

EDUCATION

ETH Zürich, Switzerland

Sept. 2020 - Present

- Master in Computer Science

Shanghai Jiao Tong University, China

Sept. 2016 - Jun. 2020

- B.S. in Computer Science, **ACM Class**, Zhiyuan College

- **Advisor:** Prof. **Yong Yu** and Prof. **Cewu Lu**

- **GPA:** 3.65/4.0 (Computer Vision:100/100)

- **Standardized Tests:** **TOEFL:**106(L27,S24,R27,W28), **GRE:**319(150+169+3.5)

INTERNSHIP

Amazon AWS Shanghai AI Lab

Jun. 2020 - Sept. 2020

- Research Intern

- **Advisors:** Tong He and Tianjun Xiao

University of California, Berkeley

Jul. 2019 - Dec. 2019

- Visiting Student in Berkeley DeepDrive & BAIR lab

- **Advisors:** Prof. **Trevor Darrell** and Prof. **Fisher Yu**

MANUSCRIPTS

3D Objectness Estimation via Bottom-up Regret Grouping [**Paper**]

In submission

- Zelin Ye, **Yan Hao**, Liang Xu, Rui Zhu, Cewu Lu

- Area: Segmentation, grouping and shape

PAL-Net: Predicate-Aware Learning for Scene Graph Generation

In submission

- Liang Xu, Yong-Lu Li, Mingyang Chen, **Yan Hao**, Cewu Lu

- Area: Scene analysis and understanding

PUBLICATIONS

Visual Rhythm Prediction with Feature-Aligned Network [**Paper**]

MVA 2019

- Yutong Xie, Haiyang Wang, **Yan Hao**, Zihao Xu

- The paper proposed a data-driven visual rhythm prediction method, in which several visual features are extracted and then fed into an end-to-end neural network to predict the visual onsets.

RESEARCH EXPERIENCE

Amazon AWS Shanghai AI Lab

Jun. 2020 - Sept. 2020

- Advisor: Tong He and Tianjun Xiao

- **Grid-GCN implementation in python**

During my internship, I mainly work on implementing the algorithm of “**Grid-GCN for Fast and Scalable Point Cloud Learning, CVPR2020**” to our codebase **Deep Graph Library (DGL)**. In addition, I made much effort in improving the speed of the method, and my final version of implementation is 2 times faster than the first version.

- Advisor: Prof. **Fisher Yu** and Prof. **Trevor Darrell**

- Video Object Segmentation

We target at conducting instance level object segmentation on driving videos using mask propagation technique and optical flow. It is challenging since our dataset has more complex occlusion pattern and stronger requirement on feature discrimination power compared with previous dataset like Davis or MOTs dataset.

Machine Vision and Intelligence Group

Jul. 2018 - Jun. 2020

- Advisor: Prof. **Cewu Lu**

- Project 1: 3D Objectness

We propose a robust 3D objectness estimation method in a bottom-up manner, i.e. first over-segment scene point clouds and then group them iteratively with a novel regret mechanism to withdraw incorrect groupings. Our experiments achieved state-of-the-art 3D objectness methods with a small number of proposals in two difficult datasets, GMU-kitchen and CTD.

- Project 2: Predicate Aware Learning Network (PAL-Net)

Our proposed PAL-Net has two ingredients for scene graph generation. First we introduce a novel embedding loss for translation embedding in a metric learning manner. Then we take predicates as conditions for contextual modeling to alleviate noise. Extensive experiments on two challenging datasets, VRD and Visual Genome yield a state-of-the-art performance.

- Project 3: Keypoint Detection Based on 3D Vision and Its Applications

This work creatively uses the existing complete 3D pointcloud dataset to construct a brand-new incomplete pointcloud dataset, and conducts sufficient 3D keypoint detection experiments on pointcloud datasets with different degrees of incompleteness. Subsequently, in order to verify the application value of the keypoint detection of the pointcloud of the incomplete object, the project uses the extracted keypoints to estimate the 6D pose of the incomplete object.

COURSE PROJECTS

2016	Chinese Battle Chess AI: A Chinese Battle Chess program
2017	STL: Implementation of three data structures in C++: vector, map and deque
	Mips-simulator: C++ program that simulates five-stage pipeline to process MIPS instructions.
2018	RISC-V CPU: CPU simulator with five-stage pipeline, implemented in Verilog HD.
	Text Classification: A classification model for article recommendation.
	Item Recommendation: A recommendation system to predict the preference score of the given user on the specific items.
	Compiler[Code]: A compiler in Java whose source language is simplified C and target language is MIPS assembly.

TEACHING EXPERIENCE

C++ Programming(CS152): Served as a teaching assistant, duty included designing part of the homework and exam problems and helping students with their problems about homework.

AWARDS AND HONORS

Meritorious Winner in Mathematical(Interdisciplinary) Contest in Modeling(MCM/ICM)	2018
Xing Cai Honorary Scholarship , Shanghai Jiao Tong University	2017
Zhiyuan Honorary Scholarship , Shanghai Jiao Tong University	2016,2017,2018

SKILLS

Programming Languages: Python(PyTorch, TensorFlow), C/C++, Java, Matlab, Latex