

Zixuan Huang

E-mail: zxhuang1698@gmail.com

Education

Georgia Institute of Technology

2020 – current

PhD in Computer Science

- Advisor: James M. Rehg

University of Wisconsin-Madison

2018 – 2020

Master of Science in Computer Science

- Core Curricula: Computer Vision, Machine Learning, High-Performance Computing, Non-linear Optimization
- GPA to date: 3.93/4.0

University of Science and Technology of China

2014 – 2018

Bachelor of Engineering in Information Security

- Core Curricula: Signals and Systems, Stochastic Processes, Introduction to Algorithms, Operating Systems, Digital Image Analysis, Mathematical Analysis, Cryptography
- Special Class for the Gifted Young
- GPA: 90/100 (overall); 91/100 (major)
- Ranked 2/66 in my major

Publications

Interpretable and Accurate Fine-grained Recognition via Perceptual Grouping

Zixuan Huang, Yin Li

CVPR, oral presentation, 2020

HMS-Net: Hierarchical Multi-scale Sparsity-invariant Network for Sparse Depth Completion

Zixuan Huang, Junming Fan, Shenggan Cheng, Shuai Yi, Xiaogang Wang, Hongsheng Li

IEEE Trans. on Image Processing (TIP), 2019

Research Experience

Research Assistant | Rehg Lab, Georgia Tech

Sept. 2020 – current

Advisor: James M. Rehg, Professor, Georgia Tech

Project: Multi-Category 3D Reconstruction without 3D Cues (ongoing)

- Propose a novel method that learns implicit shape representation of multiple object categories in a single feed-forward model. The model is only supervised by single-view masked images.
- Quantify the performance of our model via large-scale experiments on all 55 categories of ShapeNet, representing an order of magnitude more categories within a single model compared to prior work.
- Design a novel category-based regularization approach that further boosts the performance of our model and stabilizes the training. We also use this to quantify the value of knowing the object semantics for shape reconstruction performance.

Research Assistant | Yin's Group, UW-Madison

Sept. 2018 – May 2020

Advisor: Yin Li, Assistant Professor, UW-Madison

Project: Interpretable and Accurate Fine-grained Recognition via Region Grouping

- Proposed a new method for convolutional neural networks to interpret their decisions via perceptual grouping.
- Explored a novel prior to learn human-aligned visual concepts for fine-grained classification.
- Demonstrated the effectiveness of designed model through quantitative and qualitative experiments across three challenging datasets.

Trainee Researcher | Research Center, SenseTime Inc.

Feb. 2018 – June 2018

Advisor: Hongsheng Li, Assistant Professor, Chinese University of Hong Kong

Advisor: Shuai Yi, Research Director, SenseTime

Project: Hierarchical Multi-scale Sparsity-invariant Network for Depth Completion

- Proposed three sparsity-invariant operations for tasks with sparse input.
- Designed original multi-scale model based on proposed sparsity-invariant operations for fusing information across different scales.
- Achieved the best result on KITTI Depth Completion Benchmark and NYU Depth v2 dataset in comparison to existing state-of-the-art approaches.

Project: Visual Odometry-aided Video Segmentation

July 2017 – Sept. 2017

- Utilized sparse depth maps generated by VO algorithms to improve the results of semantic segmentation.
- Designed original model for fusing information from different sources, e.g. irregular depth maps and images.
- Enhanced segmentation performance for road scene compared with baseline.

Undergraduate Research Assistant | Computer Vision Group, USTC

Feb 2017 – June 2017

Advisor: Professor Nenghai Yu, University of Science and Technology of China

Project: Object tracking in indoor surveillance video

- Completed literature review on object tracking and implemented several state-of-the-art algorithms
- Improved the performance of baseline in indoor surveillance videos using global searching and recovering algorithms based on feature transformation of objects

Teaching Experience

- Teaching Assistant | CS534 @ UW-Madison (Computational Photography)
- Teaching Assistant | CS838 @ UW-Madison (Learning Based Methods for Computer Vision)

Selected Honors and Awards

UW-Madison CS Scholarship	Sept. 2018, Feb. 2019
<ul style="list-style-type: none">• Awarded to outstanding students admitted in Fall 2018	
Outstanding Student Scholarship of University of Science and Technology of China	Oct. 2017
<ul style="list-style-type: none">• Gold, Top 4% of cohort	
Institute of Electronics of Chinese Academy of Sciences Scholarship	Dec. 2016
<ul style="list-style-type: none">• Top 5% of cohort	
Special Class for the Gifted Young	Sept. 2014
<ul style="list-style-type: none">• 1 of 43 young talented students selected nationally	

Skills & Others

- Proficient in Python, C/C++ and Matlab
- Proficient in PyTorch, Caffe and other deep learning frameworks