

# Yizhe Zhu

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## RESEARCH INTERESTS

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**Machine Learning**  
**Computer Vision**  
**Language and Vision**

Zero-Shot Learning, Deep Generative Model, Unsupervised Learning  
Image and Video Generation, Feature Disentanglement  
Noisy Text-Guided Image Recognition

## EDUCATION

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### Rutgers University

Ph.D. in Computer Science

Specialties: Computer Vision, Machine Learning

Advisor: Prof. Ahmed Elgammal

*Jan. 2015 - present*

GPA: 3.91/4.0

### University of Missouri

Master of Science in Electronic & Computer Engineering

Specialties: Computer Vision, Image Compression

Advisor: Prof. Zhihai He

*Sep. 2013 - Dec. 2014*

GPA: 3.63/4.0

### Shanghai University

Bachelor of Science in Telecommunications

*Sep. 2009 - Aug. 2013*

GPA: 3.47/4.0

## RESEARCH PUBLICATION

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1. **Yizhe Zhu**, Renqiang Min, Asim Kadav, Hans Peter Graf. S3VAE: Self-Supervised Sequential VAE for Representation Disentanglement and Data Generation. (submitted to **CVPR** 2020)
2. **Yizhe Zhu**, Jianwen Xie, Bingchen Liu, Ahmed Elgammal. Learning Feature-to-Feature Translator by Alternating Back-Propagation for Zero-Shot Learning. *International Conference on Computer Vision (ICCV)* 2019
3. **Yizhe Zhu**, Jianwen Xie, Zhiqiang Tang, Xi Peng, Ahmed Elgammal. Semantic-Guided Multi-Attention Localization for Zero-Shot Learning. *Neural Information Processing Systems (NeurIPS)* 2019
4. Zhiqiang Tang, Xi Peng, Tingfeng Li, **Yizhe Zhu**, Dimitris N Metaxas. AdaTransform: Adaptive Data Transformation. *International Conference on Computer Vision (ICCV)* 2019
5. **Yizhe Zhu**, Mohamed Elhoseiny, Bingchen Liu, Ahmed Elgammal. A Generative Adversarial Approach for Zero-Shot Learning from Noisy Texts. *International Conference on Computer Vision and Pattern Recognition (CVPR)* 2018.
6. **Yizhe Zhu**, Ahmed Elgammal. A Multilayer-Based Framework for Online Background Subtraction with Freely Moving Cameras. *International Conference on Computer Vision (ICCV)* 2017
7. Mohamed Elhoseiny\*, **Yizhe Zhu**\*, Han Zhang, Ahmed Elgammal. Link the head to the beak: Zero Shot Learning from Noisy Text Description at Part Precision. *International Conference on Computer Vision and Pattern Recognition (CVPR)* 2017
8. Bingchen Liu, **Yizhe Zhu**, Zuohui Fu, Gerard de Melo, Ahmed Elgammal. OOGAN: Disentangling GAN with One-Hot Sampling and Orthogonal Regularization. (**AAAI**) 2020

\* means Co-first authors

## RESEARCH EXPERIENCE

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### Disentangled Feature Learning for Video Generation

Research Intern

Jun. 2019 - Dec. 2019  
NEC Labs America, Inc., NJ

- Proposed a sequential variational autoencoder(VAE) to learn disentangled representations of videos under self-supervision for controllable video generations.

### Zero-Shot Learning Based on Attributes

Research Intern

Jun. 2018 - Sep. 2018  
Hikvision Research Institute, CA

- Proposed a conditional latent variable model to project semantic features to visual feature space and applied to zero-shot learning problem.
- Proposed a multi-attention localization model to detect the discriminative parts of objects in weakly-supervised manner. The combined part and object features provide richer visual information for zero-shot learning.

### Zero-Shot Learning from Noisy Text Description

Research Assistant

Jul. 2016 - present  
CBIM, Rutgers University, NJ

- Proposed two approaches for zero-shot learning with noisy Wikipedia articles as the descriptions of visual categories.
  1. A visual-semantic embedding approach with part-based regularization, aiming to eliminate irrelevant text information without requiring part-text correspondence annotations or part annotations at test time.
  2. A generative approach(*e.g.*, GAN) to synthesize pseudo image features for unseen classes, converting the zero-shot learning problem to a conventional classification problem.

### Background Subtraction for Moving Camera

Research Assistant

Jun. 2015 - Jun. 2016  
CBIM, Rutgers University, NJ

- Proposed an multilayer-based background subtraction method for moving cameras which improves the background subtraction performance and realizes instance segmentation.

### Moving Objects Detection and Labeling

Master Thesis

Oct. 2013 - Dec. 2014  
University of Missouri

- Designed a system to detect the moving objects in surveillance videos and ascertain the type of moving objects, such as car, bicycle, and pedestrian, as well as the color of moving objects.

## ACADEMIC SERVICES

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Reviewer for European Conference on Computer Vision (ECCV) 2020

Reviewer for IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018 to 2020

Reviewer for International Conference on Computer Vision (ICCV) 2019

Reviewer for AAAI Conference on Artificial Intelligence (AAAI) 2019 to 2020

Reviewer for IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) Journal 2019

Reviewer for International Journal of Computer Vision (IJCV) Journal 2019

Reviewer for Asian Conference on Computer Vision (ACCV) 2018

## AWARDS, GRANTS, & HONORS

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Student Travel Grant, US National Science Foundation (NSF) 2017/2018

Research Assistant Scholarship 2018/2019

Teaching Assistant Scholarship 2016/2017

Excellent Student Award in SHU 2012

Recognition Award from Shanghai Innovation Experiment Program 2012

for University Students

The First Prize Scholarship in SHU 2010/2011/2012

## TECHNICAL SKILLS

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**Deep Learning Toolboxes:**

Pytorch, Caffe, Tensorflow

**Programming Language:**

Python, C/C++, Matlab

**Software Packages:**

OpenCV