

# Zengjie Song

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## Education

### Xi'an Jiaotong University (XJTU)

Xi'an, China

Ph.D. in Statistics

Mar. 2015 - PRESENT

- Supervisor: **Prof. Jiangshe Zhang**
- Thesis: Brain-inspired Machine Learning Models and Algorithms with Applications in Image Processing
- External Examiner: **Prof. Xiangchu Feng**, Internal Examiner: **Prof. Jian Sun**

### XJTU

Xi'an, China

M.S. in Applied Mathematics

Sep. 2013 - Feb. 2015

- Supervisor: **Prof. Jiangshe Zhang**
- Finished 3-year program in 2 years, enrolled as doctorate student one year ahead.

### XJTU

Xi'an, China

B.S. in Applied Mathematics (**Mathematics Elite Program**)

Aug. 2009 - Jun. 2013

## Research Experience

### Department of Computer Science, University of Illinois at Urbana-Champaign

Urbana, U.S.A.

Visiting Ph.D. Student, Supervisor: **Prof. Oluwasanmi Koyejo**

Oct. 2017 - Oct. 2018

- Designed two deep neural networks (mddAE and CDNet) to learn controllable disentangled image representations, where the CDNet model leverages GANs to improve the output image quality.

### Department of Statistics, XJTU

Xi'an, China

Research Assistant, Supervisor: **Prof. Jiangshe Zhang**

Mar. 2015 - Sep. 2017

- Proposed an improved predictive coding model (FIPC) with the fast inference function for feature extraction and image classification.

### Department of Applied Mathematics, XJTU

Xi'an, China

Research Assistant, Supervisor: **Prof. Jiangshe Zhang**

Sep. 2013 - Feb. 2015

- Proposed a no-reference JPEG image quality assessment index (ISNIQI), which employs the image saliency map to weigh qualities of different image regions accordingly.

### National University of Defense Technology

Changsha, China

Member of the Summer School for Graduate Students in Applied Mathematics

Jul. 2013 - Aug. 2013

- Studied the mathematical knowledge and techniques about optimization methods in information processing.

## Publications & Preprints

1. **Zengjie Song**, Oluwasanmi Koyejo, Jiangshe Zhang. Controllable Disentanglement Network. *Submitted to IEEE Transactions on Cybernetics (T-CYB)*, major revision, 2019. (pdf coming soon)
2. Kai Sun, Jiangshe Zhang, Junmin Liu, Ruixuan Yu, and **Zengjie Song**. DRCNN: Dynamic Routing Convolutional Neural Network for Multi-view 3D Object Recognition. *Submitted to IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, under review, 2019.
3. **Zengjie Song**, Oluwasanmi Koyejo, Jiangshe Zhang. Learning Controllable Disentangled Representations with Decorrelation Regularization. *arXiv preprint arXiv:1912.11675*, 2019. (pdf)
4. **Zengjie Song**, Jiangshe Zhang, Guang Shi, and Junmin Liu. Fast Inference Predictive Coding: A Novel Model for Constructing Deep Neural Networks. *IEEE Transactions on Neural Networks and Learning Systems (T-NNLS)*, 30(4): 1150-1165, 2019. (pdf)
5. Peiju Chang, Jiangshe Zhang, Junying Hu, and **Zengjie Song**. A Deep Neural Network Based on ELM for Semi-supervised Learning of Image Classification. *Neural Processing Letters (NPL)*, 48(1): 375-388, 2018. (pdf)

6. **Zengjie Song**, Jiangshe Zhang, and Junmin Liu. No-Reference Image Quality Assessment Using Image Saliency for JPEG Compressed Images. *Journal of Imaging Science and Technology*, 60(6): 60503-1-60503-8, 2016. ([pdf](#))

## Projects (participated)

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1. **Research on Deep Neural Networks and Fast Inference Methods Based on Predictive Coding**, National Natural Science Foundation of China (61976174)
2. **Research on Deep Generative Models and Transfer Learning for Pansharpening of Remote Sensing Images**, National Natural Science Foundation of China (61877049)
3. **Variable Selection of High-Dimensional Data Based on Probabilistic Generative Models**, National Natural Science Foundation of China (11671317)
4. **Research on Learning Deep Architecture with Asymmetry Forward and Backward Connections**, National Natural Science Foundation of China (61572393)

## Teaching Experience

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### XJTU

Teaching Assistant, *Undergraduate Thesis Design*

*Xi'an, China*

*Spring 2015, Spring 2016, Spring 2017*

### XJTU

Teaching Assistant, *Advanced Mathematics*

*Xi'an, China*

*Fall 2014*

## Scholarships & Awards

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2018	<b>"Hao Jianxue" Principal Class Scholarship</b> , XJTU	<i>China</i>
2018	<b>Overseas Visiting Scholarship for Graduate Students</b> , XJTU	<i>China</i>
2017	<b>Scholarship for Visiting Ph.D. Student</b> , China Scholarship Council (CSC)	<i>China</i>
2014	<b>"Huang Qianheng" First Grade Scholarship</b> , XJTU	<i>China</i>
2014	<b>Outstanding Graduate Student</b> , XJTU	<i>China</i>
2012	<b>Siyuan Scholarship</b> , XJTU	<i>China</i>

## Skills

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**Programming** Python, Matlab,  $\LaTeX$   
**Languages** Chinese and English