

Peiyao Wang

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Personal Statement

I am a graduate student majored in Electrical Engineering from Xidian University, China, and my advisor is Professor Weisheng Dong. My research interests include **image processing, deep learning and sparse representation**. Up to now, I have two papers accepted by an international journal (IEEE TPAMI) and an international conference (MMSP 2018), respectively.

Education

Xidian University, Xi'an, Shaanxi, China 09/2016-06/2019 (Expected)

M.S. student at the School of Artificial Intelligence

Majored in Electrical Engineering

Field: Image processing, Deep Learning, Sparse representation

Xidian University, Xi'an, Shaanxi, China

08/2012-06/2016

B.S. student at School of Electronic Engineering

Majored in Detecting Guidance and Control Technique

GPA, 3.7/4.0, Ranking in major: 2/38

Publications & Activities

Publications

- **Denoising Prior Driven Deep Neural Network for Image Restoration (first student author)**
Accepted by IEEE Transactions on Pattern Analysis and Machine Intelligence

Motivation: Design deep convolutional network supervised by traditional models, which are more explicable and robust.

- Propose a denoising-based image restoration algorithm and design network modules supervised by the iterative solution.
- Jointly optimize the denoisers and the BP modules through end-to-end training.
- Results achieve state-of-the-art on image restoration tasks such as denoising, super-resolution and deblurring.

- **ConvCSNet: A Convolutional Compressive Sensing Framework Based on Deep Learning**
Accepted by International Workshop on Multimedia Signal Processing

About: A novel two-branch convolutional neural network to sense the whole image using a set of convolutional filters and reconstructs images.

- implement the sensing by convolving the input image with a set of random filters followed by

subsampling

- reconstruct the input image from the linear measurements with a novel CNN containing two branches, which is based on the sparsity-based reconstruction model
- **Learning Hybrid Sparsity Prior for Image Restoration: Where Deep Learning Meets Sparse Coding, Submitted to IEEE Transactions on Circuits and Systems for Video Technology**
Motivation: Sparse priors from extrinsic training data and input observation images can be combined to produce a hybrid prior incorporating the knowledge from both domains, improving the sparsity-based performance.
 - The initial estimate obtained via CNN and the set of similar patch position are then fed into the structured analysis sparse coding(SASC) network that contains several recurrent stages to reconstruct the target image.
 - The SASC network mimics the process of alternatively updating of the feature map and the HR image.
- **(Patent) The Method of Removing the Multiplicative Noise via Deep Neural Network,** Weisheng Dong, **Peiyao Wang**, Ming Yuan, Guanghui Zhao, Guangming Shi (Patent under review, the first student author)

Activities

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|---|---------|
| • China Multiply Media(ChinaMM2018) | 09/2018 |
| • 2018 International Conference on Pattern Recognition(2018 ICPR), <i>oral report</i> | 08/2018 |
| • ShanghaiTech Symposium on Information Science and Technology(SIST2018) | 07/2018 |
| • 2018 Vision And Learning Seminar (2018Valse) | 04/2018 |

Awards & Honors

Awards

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| • BeiDou-Cup China Adolescents Science Technology Invention Contest, <i>Excellence</i> | 05/2015 |
| • Interdisciplinary Contest In Modeling of America , <i>Meritorious Winner</i> | 04/2015 |
| • China Undergraduate Mathematical Contest in Modeling, <i>Second Prize</i> | 12/2014 |
| • Mathematical Contest in Modeling of Xidian University, <i>Second Prize</i> | 06/2014 |

Honors

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| • First Class Graduate Student Scholarships(Top10%) | 2016-2018 |
| • Outstanding Graduate Student(Top10%) | 10/2017 |
| • First Class Undergraduate Student Scholarships(Top10%) | 2013-2015 |

Skills

Programming Language: Python, Matlab, C

Tools: Tensorflow, Caffe, MatConvNet