

## Chuanmin Jia

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### RESEARCH INTERESTS

- Video Compression/Processing
- Deep feature coding
- Machine Learning

### EDUCATION

**Peking University (PKU)**, BJ, CHN, 2015.Sep – present

- *Ph.D. student*, Electronics Engineering & Computer Science
- Advisor: Prof. Siwei Ma and Prof. Wen Gao

**New York University (NYU)**, NY, USA, 2017.Dec – present

- *Visiting Ph.D student*, Electronic and Computer Engineering
- Advisor: Prof. Yao Wang

**Beijing Univ. of Posts. & Telecom. (BUPT)**, BJ, CHN, 2011.Sep – 2015.July

- *B.Eng*, School of Computer Science
- GPA: 86.7/100, rank: 35/301
- Thesis: Research on Compressed Video Enhancement and GPU Acceleration.

### RESEARCH EXPERIENCE

*Visiting scholar*, NYU-Tandon Dec. 2017 – present  
Video Lab, Brooklyn, NY

- Research on deep learning based coding tools for next generation video coding standard.
- Deep learning feature coding algorithms for facial images and surveillance videos.

*Research Assistant*, PKU-EECS Sep. 2014 – present  
Institute of Digital Media, Beijing

- Designed machine learning based in-loop filtering video coding tools for future video coding standards.
- Implemented video restoration and quality enhancement algorithm based on non-local self similarity prior.
- Proposed high efficiency light field image compression algorithm based on sub-aperture adaptation.
- Optimized virtual-view synthesis algorithm using CUDA, achieved real-time view synthesis for full HD videos.

*Research Intern*, PKU-EECS Feb. 2014 – Aug. 2014  
Institute of Computational Linguistics, Beijing

- Conducted performance comparison on different deep learning algorithms for Chinese word segmentation and word embedding.

*Research Intern*, BUPT-SCS Aug. 2013 – Mar. 2014  
Innovation Center, Beijing

- Interned as a national undergraduate projects member for innovation research.

## PUBLICATIONS *Journal Papers*

- **C. Jia**, F. Luo, X. Zhang, S. Wang, S. Wang and S. Ma, “Fast Non-local Adaptive In-Loop Filter Optimization on GPU, **submitted** to *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2018 (Under Review).
- **C. Jia**, S. Wang, X. Zhang, S. Wang, J. Liu and S. Ma, “Content-Aware Convolutional Neural Network for In-loop Filtering in High Efficiency Video Coding, **submitted** to *IEEE Transactions on Image Processing (TIP)*, 2017 (Under Review).
- S. Ma, X. Zhang, J. Zhang, **C. Jia**, S. Wang and W. Gao “Nonlocal In-Loop Filter: The Way Toward Next-Generation Video Coding?,” *IEEE MultiMedia* 23 (2), 16-26.

## *Conference Papers*

- Z. Zhao, S. Wang, **C. Jia**, X. Zhang, S. Ma and J. Yang, “Light Field Image Compression Based on Deep Learning,” **accepted** by *IEEE International Conference on Multimedia & Expo (ICME)*, 2018. (Oral, 15%)
- Y. Wang, X. Fan, **C. Jia**, D. Zhao and W. Gao, “Neural Network based Inter Prediction for HEVC,” **accepted** by *IEEE International Conference on Multimedia & Expo (ICME)*, 2018. (Poster, 30%)
- X. Meng, **C. Jia**, S. Wang, X. Zheng and S. Ma, “Optimized Non-local In-Loop Filter for Video Coding,” **submitted** to *IEEE Picture Coding Symposium (PCS)*, 2018.
- S. Wang, Z. Zhao, **C. Jia**, X. Zhang, X. Zhangy, S. Wang, S. Ma and W. Gao, “Deep Network Based Image Compression with Adaptive Pre- and Postprocessing,” **submitted** to *IEEE Picture Coding Symposium (PCS)*, 2018.
- **C. Jia**, S. Wang, X. Zhang, S. Wang and S. Ma, “Spatial-Temporal Residue Network Based In-Loop Filter for Video Coding,” *Proc. of IEEE Visual Communications and Image Processing (VCIP)*, St.Petersburg, Florida, USA, Dec, 2017. (Oral)
- **C. Jia**, Y. Yang, X. Zhang, S. Wang, S. Wang and S. Ma, “Light Field Image Compression with Sub-apertures Reordering and Adaptive Reconstruction,” *Proc. of the Pacific-Rim Conference on Multimedia (PCM)*, Harbin, China, Sept, 2017. (Oral) (**Best Paper Award**)
- **C. Jia**, Y. Yang, X. Zhang, S. Wang, X. Zhang, S. Wang and S. Ma, “Optimized Inter-view Prediction Based Light Field Image Compression with Adaptive Reconstruction,” *Proc. of IEEE International Conference on Image Processing (ICIP)*, grand challenge for LF image coding, Beijing, China, Sept, 2017. (Oral)
- **C. Jia**, X. Zhang, J. Zhang, S. Wang and S. Ma, “Deep Convolutional Network based Image Quality Enhancement for Low Bit Rate Image Compression,” *Proc. of IEEE Visual Communications and Image Processing (VCIP)*, Chengdu, China, Nov. 2016. (Oral)
- J. Zhang, **C. Jia**, N. Zhang, S. Ma, and W. Gao, “Structure-driven Adaptive Non-local Filter for High Efficiency Video Coding (HEVC),” *Proc. of IEEE Data Compression Conference (DCC)*, Snowbird, Utah, USA, Mar. 2016. (Oral) (**Top Conference in Data Compression**)
- J. Zhang, **C. Jia**, S. Ma, and W. Gao, “Non-Local Structure-Based Filter for Video Coding,” *Proc. of IEEE International Symposium on Multimedia (ISM)*, Miami, Florida, USA, Dec. 2015. (Oral)

**PROFESSIONAL** Reviewer Service  
**ACTIVITY**

- IEEE International Conference on Multimedia and Expo (ICME). (since Dec 2017)
- IEEE International Symposium on Multimedia (ISM). (since Aug 2017)
- IEEE Visual Communication and Image Processing (VCIP). (since July 2017)
- Journal of Visual Communication and Image Representation (JVCIR). (since Oct 2016)

Conference Presentations and Invited Talks

- Recent Advances in Machine Learning Based Video Coding, *Video Lab, NYU-Tandon, NY, U.S, Feb. 2018*
- Spatial-Temporal Residue Network Based In-Loop Filter for Video Coding, *VCIP2017, St Petersburg, FL, U.S, Dec. 2017*
- Light Field Image Compression with Sub-apertures Reordering and Adaptive Reconstruction, *PCM2017, Harbin, China, Sep. 2017*
- Optimized Inter-View Prediction Based Light Field Image Compression With Adaptive Reconstruction, *ICIP2017, Grand Challenge for Light Field Image coding, Beijing, China, Sep. 2017*
- Deep Convolutional Network based Image Quality Enhancement for Low Bit Rate Image Compression, *VCIP2016, Chengdu, China, Nov. 2016*

**TEACHING**  
**EXPERIENCE**

TA: Video Coding and Understanding (EECS 04812102), EECS, PKU, Spring.2017  
TA (for projects): Image and Video Processing (EL-GY 6123), ECE, NYU, Spring.2018

**COMPUTER**  
**SKILLS**

*Languages & Software:* C/C++, CUDA, MATLAB, Power Shell, Python,  $\text{\LaTeX}$ .  
*Operating Systems:* Mac OS X, Ubuntu Linux, Windows.  
*Libraries/Frameworks:* Caffe, MXNET, Tensorflow, HEVC/H.265, AVS2.  
*Github Repo:*  $\circ$  <https://github.com/codersadis>  
*Homepage:*  $\circ$  <http://www.jiachuanmin.site>  
*Google Scholar:*  $\circ$  <https://scholar.google.com/citations?user=x5Na9n0AAAAJ>

**SELECTED**  
**PROJECTS**

View Synthesis Optimization, Apr. 2016 - Sep. 2016

- Optimized an open-source virtual-view synthesis software using CUDA.
- Achieved 6x acceleration, with real time full HD (1080P) view synthesis over 40fps.
- Implemented left view and right view wrapping, blending and fill occlusion parallelism algorithm in CUDA.

NFC Tour Guide, Aug. 2013 - Mar. 2014

- Developed an Android app using NFC for tourism
- Mainly responsible for implementing of NFC pay, speech tour guide and database interface design.

Flower Recognition, Jul. 2013 - Sep. 2013

- Proposed flower recognition algorithm by combining histogram and contour feature with linear classifier.
- Implemented iOS app development and recognition algorithm APIs.

**HONORS &  
AWARDS**

**Best Reviewer** of IEEE Visual Communication and Image Processing (VCIP), 2017  
**Best Paper Award** of Pacific-Rim Conference on Multimedia (PCM), 2017  
1<sup>st</sup> prize of Video Big Data Compression Contest of National Graduate Contest on  
Smart-City Technology. 2016  
Excellent Graduation Thesis Award, BUPT, 2015  
Excellent Undergraduates, BUPT, 2015  
Innovation Scholarship, PKU, 2015  
Honorable Mention Winner in Mathematical Contest in Modeling (MCM), 2014

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