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*

- <u>**C. Jia**</u>, 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).

- <u>**C. Jia**</u>, 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, <u>**C. Jia**</u>, S. Wang and W. Gao "Nonlocal In-Loop Filter: The Way Toward Next-Generation Video Coding?," *IEEE MultiMedia* 23 (2), 16-26.

Conference Papers

- X. Meng, <u>**C. Jia**</u>, 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, <u>**C. Jia**</u>, 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.

- Z. Zhao, S. Wang, <u>**C. Jia**</u>, 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, <u>**C. Jia**</u>, D. Zhao and W. Gao, "Neural Network Based Inter Prediction for HEVC," **accepted** by *IEEE International Conference on Multimedia & Expo (**ICME**)*, 2018. (Poster, 30%)

- <u>**C. Jia**</u>, 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)

- <u>**C. Jia**</u>, 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**)

- <u>**C. Jia**</u>, 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)

- <u>**C. Jia**</u>, 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, <u>**C. Jia**</u>, 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, <u>**C. Jia**</u>, 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 ACTIVITY
Reviewer Service
- 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, *V-CIP2017, 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, LATEX.
Operating Systems: Mac OS X, Ubuntu Linux, Windows.
Libraries/Frameworks: Caffe, MXNET, Tensorflow, HEVC/H.265, AVS2.
Github Repo: ⌀ https://github.com/codersadis
Homepage: ⌀ http://www.jiachuanmin.site
Google Scholar: ⌀ 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 &	**Best Reviewer** of IEEE Visual Communication and Image Processing (VCIP), 2017
AWARDS	**Best Paper Award** of Pacific-Rim Conference on Multimedia (PCM), 2017
	1st 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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