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 ACTIVITY

Reviewers for Journal and Conference

- 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 & AWARDS

Best Reviewer of IEEE Visual Communication and Image Processing (VCIP), 2017
Best Paper Award of Pacific-Rim Conference on Multimedia (PCM), 2017
1^{st} 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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