Xin Chen

Personal Information

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Education

Ph. D University of Hawaii at Manoa, Honolulu, HI, 2007

MSEE Hefei University of Technology, Hefei, Anhui, China, 2003

Research Interests

Computer Vision, Machine Learning, Efficient AI, and System ML

Professional Experience

Principal Research Scientist, Kuaishou Technology, Palo Alto, CA 5/2019 - present

- Compression-compilation co-design for efficient DNNs inference on CPUs across cloud and mobile.
- Video understanding including temporal grounding, facial landmark detection.
- Academic research collaborations with top tier universities and mentor internships.

Sr. Software Engineer, Petuum Inc., Sunnyvale, CA 11/2018 - 5/2019

- AI solution for medical applications.

Staff AI Engineer & Sr. Manager of AI Platform,
Emerging Technology Center, Midea Group, San Jose, CA 4/2017 - present

- Leader of project MiMatrix which aimed at building a compact Peta-scale GPU clusters to train most of state-of-the-art models such as ResNet101 on Imagenet 1K in one day. I lead a team to co-design and built a cluster consisting of 128 Nvidia Tesla P100 GPUs and developed a deep learning training framework. The products that we delivered including: a deep learning training framework, visual net-design tool, model understanding tool, Midea AI feeling center.
- Academic research collaborations with top-tier universities and mentor internships.

Sr. AI Engineer, Emerging Technology Center, Midea Group, San Jose, CA 9/2016 - 3/2017

- Founding Engineer of Midea Emerging Technology Center and build AI platform team from myself to six members in one year.
- Early promotion to Staff Engineer in six months because of great contributions to projects and team building.

Principal Engineer, NovuMind, Santa Clara, CA 9/2015 - 8/2016

- Deep Learning and its applications to computer vision and Internet of Thing (IoT) domains.

Senior Software Engineer, Hermes Microvision Inc., San Jose, CA 12/2012 - 8/2015

- Designed and built highly-scalable and low-latency distributed computing framework for real-time multi-column E-beam wafer inspection system, and developed a new message passing interface protocol.

- Developed algorithms and software for E-beam wafer inspection system.
- Developed parallel algorithms of image processing and computer vision on various computing platforms for real-time applications.

Imaging Scientist, Konica Minolta System USA Lab, San Mateo, CA 11/2011 - 8/2012

- Developed algorithms and software for digital document authentication and analysis system.

Assistant Computer Scientist, Dept. of Radiology, Mass. General Hospital, &
Instructor (Research Faculty), Harvard Medical School, Boston, MA 10/2010 - 9/2011

- Model-based iterative 3D imaging reconstruction to reduce blooming artifacts. Designed parallel algorithm of cone beam back projection (pixel driven) and ray casting 3D cone bean forward projection, and implemented on Nvidia C2050 (448 cores) using CUDA 4.0, speedup over 100 and 70 times, respectively, compared to a 44-node CPU cluster.

Video Engineer, Fairchild Imaging, Milpitas, CA, 6/2009 - 5/2010

- GPU-based 100 frames per second (FPS) high resolution/dynamic range real-time imaging system.

Research Associate, University of California at San Francisco, San Francisco, CA 3/2008 - 5/2009

- GPU-accelerated 3D cone-beam CT reconstruction.

Research Intern, Nvidia Crop., Santa Clara, CA 10/2007 - 2/2008

- CUDA-accelerated image processing and computer vision library.

Publications

Google Scholar (Cite: 280+, H-index: 9, Updated 2020/10/6, * equal contribution and ‡ corresponding author)

Book Chapters

[B1] Matthew Blanco, **Xin Chen**, Yuling Yan, "*Processing of sequential images of the vibrating glottis using adaptive thresholding approach*",Normal and Abnormal Vocal Folds Kinematics: High Speed Digital Phonoscopy (HSDP), Optical Coherence Tomography (OCT) & Narrow Band Imaging, pp 143-152, 1 edition, April, 2015. (ISBN-10: 1511401850, ISBN-13: 978-1511401852)

PrePrint

[P1] **Xin Chen**, Hua Zhou, Yu Zhu, Yuxiang Gao, "*A Novel Co-design Peta-scale Heterogeneous Cluster for Deep Learning Training*, arXiv preprint arXiv:arXiv:1802.02326

[P2] **Xin Chen***, Yu Zhu*, Hua Zhou, Liang Diao, and Dongyan Wang, "*ChineseFoodNet: A large-scale Image Dataset for Chinese Food Recognition*",arXiv preprint arXiv:1705.02743, 2017.

Peer-Reviewed Conference Papers

[C1] Miao Liu, **Xin Chen**, Yun Zhang, Yin Li, James M Rehg, "*Attention Distillation for Learning Video Representations*", BMVC2020 (Oral, 5% acceptable ratio).

[C2] Mingze Xu, Aidean Sharghi, **Xin Chen**‡,and David J Crandall, "*Fully-Coupled Two-Stream Spatiotemporal Networks for Extremely Low Resolution Action Recognition*", IEEE WACV 2018.

[C3] **Xin Chen**, Emma Marriott, and Yuling Yan, "*Motion Saliency Based Automatic Delineation of Glottis Contour in High-speed Digital Images*", IEEE Industrial Electronics and Applications (ICIEA), 2017.

[C4] **Xin Chen**, Diane Bless, and Yuling Yan, "*A Segmentation Scheme Based on Rayleigh Distribution Model for Extracting GAW from High-speed Laryngeal Image Sequence*", IEEE EMBS 2005.

[C5] Yuling Yan, Diane Bless, and **Xin Chen**,"*Biomedical Image Analysis in High-speed Laryngeal Imaging of Voice Production*", IEEE EMBS, 2005.

[C6] Yuling Yan, **Xin Chen**, Kartini Ahmad, and Diane Bless,"*High-speed Laryngeal Imaging Analysis of Vocal Fold Dynamics*", International Conference on Voice Physiology and Biomechanics - Marseille - August 18-20, 2004.

Journal Papers

[J1] Heyi Li, Yunke Tian, Klaus Mueller, and **Xin Chen**‡, "*Beyond saliency: understanding convolutional neural networks from saliency prediction on layer-wise relevance propagation*", Image and Vision Computing, Vol. 83, Page 70-86, 2018.

[J2] **Xin Chen**, Liang Lin, and Yuefang Gao, "*Parallel Nonparametric Binarization for Degraded Document Images*",Neurocomputing, Volume 189, 43-52 May 2016.

[J3] Xiang-Jun Shen, Lei Mu, Zhen Li, Hao-Xiang Wu, Jian-Ping Gou, **Xin Chen**, "*Large-scale support vector machine classification with redundant data reduction*", Neurocomputing, Vol. 172, Page 189-197 January, 2016.

[J4] Zhiyong He, **Xin Chen**, and Lining Sun, "*Saliency Mapping Enhanced by Structure Tensor*", Computational Intelligence and Neuroscience, Volume 2015

[J5] **Xin Chen,** Yuefang Gao, and Zhonghong Huang, "*CUDA-accelerated fast Sauvola's method on Kepler architecture*", Multimedia Tools and Applications, Vol. 74, Issue 24, Page 11809-11820, December 2015.

[J6] Mathew Blanco, **Xin Chen**, and Yuling Yan, "*A Restricted, Adaptive Threshold Segmentation Approach for Processing High-Speed Image Sequences of the Glottis*", Engineering, Vol. 5, Page 357-362, 2013.

[J7] Yuling Yan, **Xin Chen**, and Diane Bless, "*Automatic Tracing of the Vocal Fold Motion from High-speed Laryngeal Images Sequence*", IEEE Trans. Biomedical Engineering, Vol. 53, No. 7, page 1394-1400, July 2006.

Patents

[P1] **Xin Chen**, Hua Zhou, Yu Zhu, Yuxiang Gao, Personalized Laundry Appliance, Grant No. 10650273, 2020

[P2] Dongyan Wang, **Xin Chen**, Hua Zhou, Face Recognition in a Residential Environment, Grant No. 10303932, 2019

Interns Mentored

1. Yanyu Li, Northeastern University, 2020
2. Hanxiang Huang, UCSD, 2020
3. Yanjun Gao, Penn State University, 2020
4. Shulin Zhao, Penn State University, 2020
5. Chuhan Min, Duke University, 2018
6. Zehua Zhang, Indiana University at Bloomington, 2018
7. Miao Liu, Georgia Institute of Technology, 2018
8. Eman Hassan, Indiana University at Bloomington, 2018

9. Heyi Li, Stony Brook University, 2017,2020
10. Aosen Wang, University at Buffalo, State University of New York, 2017, 2018
11. Mingze Xu, Indiana University at Bloomington, 2017
12. Yuanwei Wu, University of Kansas, 2017
13. Aidean Sharghi, University of Central Florida, 2017
14. Jian Zhang, Stanford University, 2016

Honors & Awards

2005 University of Hawaii Graduate International Travelling Award

Invited Talks

How does AI become part of daily life, Human Cyber Physical Intelligence Integration Lab, Sun Yat-sen University, 2018

Professional Activities

Reviewer for Journals:

IEEE Transactions on Multimedia
Medical Image Analysis
IEEE Transactions on Image Processing (T-IP)

Computer Skills

Programming Languages: C/C++, CUDA, Python, MATLAB

Deep Learning Tools: Caffe, Pytorch

Misc: ARM NEON, SSE4.2, AVX2, AVX512

Last updated: October 20, 2020