

Chengjiang Long

Kitware Inc.
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EDUCATION

Ph.D., Computer Science Jan 2012 - Oct 2015
Stevens Institute of Technology, Hoboken, NJ, USA
Advisor: Prof. Gang Hua

M.S., Computer Science Sep 2009 - Jun 2011
Wuhan University, Wuhan, Hubei, P.R.China
GPA: 3.62/4.0 (Overall), 3.74/4.0(Major)
Advisor: Prof. Jianhui Zhao and Prof. Zhiyong Yuan

B.S., Computer Science Sep 2005 - Jun 2009
Wuhan University, Wuhan, Hubei, P.R.China
GPA: 3.26/4.0 (Overall), 3.41/4.0(Major)
Advisor: Prof. Jianhui Zhao

INTEREST: Computer Vision, Machine Learning and Artificial Intelligence
Deep learning, active learning, collaborative learning, distributed learning, multiple XXX learning, object recognition, image/video processing, image/video segmentation, object detection.

Computer Graphics and Visualization
Point cloud related research, mesh reconstruction and 2D/3D visualization.

WORK EXPERIENCE

Rensselaer Polytechnic Institute (RPI), Troy, NY Jan 2018 - Present
Adjunct Professor

- Teaching graduate students in a specific field of expertise on pattern recognition.
- Developing and managing the class syllabus and ensuring that the syllabus meets department and college standards.
- Planning and creating lectures, in-class discussions and assignments.
- Assessing grades for students based on participation, performance in class, assignments and examinations.
- Collaborating with colleagues on course curriculum.
- Advising students on how to be successful in class.
- Staying updated on innovations and changes within their course field.

Kitware Inc., Clifton Park, NY Mar 2017 - Present
Computer Vision Researcher/Senior R&D Engineer

- Continue working on AFRL DARPA Media Forensic (MediFor) Project, in charge of using video authentication for video forgery detection.
- Develop robust deep learning solutions for video manipulation detection challenges.
- Develop parametric probabilistic models to solve the task of automatic image annotation or labeling by exploiting the metadata and the visual information.

Kitware Inc., Clifton Park, NY

Feb 2016 - Mar 2017

Computer Vision Researcher/R&D Engineer

- Probability Programming for Advanced Machine Learning (PPAML) Project. (Collaborate with Galois, Inc.)
- 3D Foot Auto-measurement Project. (Collaborate with KEU for True Gault)
- Drake – an open source project for robotics. (Collaborate with MIT, Toyota Global Research)
- AFRL DARPA Media Forensic (MediFor) Project. (Collaborate with Dartmouth University, UC Berkeley, Columbia University and SUNY-Albany)

Vision Lab, Stevens Institute of Technology

Jan 2012 - Dec 2015

Research Assistant

Advisor: Prof. Gang Hua

- Reinforced Multi-Annotators Active Learning with Multi-classes Gaussian Processes Classifier for Vision Recognition.
- Correlational Gaussian Processes for Cross-domain Visual Recognition.
- Collaborative Active Learning of a Kernel Machine Ensemble for Recognition.
- Active Visual Recognition with Expertise Estimation in Crowdsourcing.

GE Global Research, Niskayuna, NY

Jun - Aug, 2015

Research Intern

Mentor: Dr. Ning Zhou, Xiao Bian and Ser-Nam Lim

- 3D vision, recognition and deep learning.
- Estimate accurate camera pose on 2D view images using large-scale synthetic images and limited number of real images.

NEC Laboratories America, Cupertino, CA

May - Aug, 2013

Research Intern

Mentor: Dr. Xiaoyu Wang

- Location Relaxation and Regionlets Re-localization for Efficient and Accurate Object Detection.
- Our detector achieves the best result in every category in terms of all the evaluation criteria on the KITTI dataset without considering deep learning. For more details, please refer to http://www.cvlibs.net/datasets/kitti/eval_object.php.

Vision & Graphics Lab, Wuhan University

Mar 2007 - Nov 2011

Research Assistant

Advisor: Prof. Jianhui Zhao and Zhiyong Yuan

- New Technology on Meteorological Visibility Observation and Calibration. (*Non-profit special research program, No.: GYHY201106047*).
- Project of Natural Science Foundation of Hubei Province (*NSFHB, No.: ZRY0940*)–Pattern Recognition Research Based on Forest Fire Smoke.
- Collaboration Project of VisImage Systems Inc. and Wuhan University–Measurement Simulation Based on Multi-source Image.
- 3D Virtual Reality Environment Research–The Online Show of Panoramic images and 3D models Based on Mobile Phone.
- The Monitoring System for Railway Safety.
- Project of Natural Science Foundation of China (*NSFC, No.: 60603079*)–Features Measurement and Error Analysis Based on 3D Unorganized Point.
- National Innovative Experiment Planning Funding from Ministry of Education of P.R. China–Partial Features Measurement and Comparison Based on 3D Unorganized Points.

- Cognitive and Neural Information Science (*985 Program at Wuhan University, No.: 2006CB504804*)–Study on Surgical Training Simulation System Based on Virtual Reality.

Wuhan Huiyoutianxia Technology Co., Ltd

Mar - Apr, 2009

Part-time Technician

- Design the database for the large maternal and child web site.
- Collaborate to build the web site.

**TEACHING
EXPERIENCE**

Stevens Institute of Technology

Teaching Assistant

- *Artificial Intelligence* Aug - Dec, 2014&2015
- *Machine Learning: Fundamental and Applications* Aug - Dec, 2014&2015
- *Computer Vision* Jan - May, 2012

Wuhan University

Teaching Assistant

- *Pattern Recognition* Mar - Jun, 2010

PUBLICATIONS

Journal and conference papers, highlighting with 3 ICCV, 1 CVPR, 1 T-PAMI, 1 IJCV, 1 ACCV and 1 ICTAI of my 14 1st/2nd-author papers, in which the 2nd authorship indicates the 1st author I worked with as my advisors or as the students I supervised.

- [1] **C. Long**, R. Collins, E. Swears, A. Hoogs. Deep Neural Networks In Fully Connected CRF For Image Labeling With Social Network Metadata. In *Proc. CVPR*, Salt Lake, Utah, June 18-22, 2018 (*Under review*).
- [2] **C. Long**, G. Hua. Correlational Gaussian Processes for Cross-domain Visual Recognition. In *Proc. CVPR*, Honolulu, Hawaii, July 21-26, 2017 (*Acceptance: 20.18%*).
- [3] G. Hua, **C. Long**, M. Yang, Y. Gao. Collaborative Active Visual Recognition from Crowds: A Distributed Ensemble Approach. *IEEE Trans. On Pattern Analysis and Machine Intelligence (T-PAMI)*, 2017 (*Top 2 journal*).
- [4] **C. Long**, E. Smith, A. Basharat, A. Hoogs. A C3D-based Convolutional Neural Network for Frame Dropping Detection in a Single Shot Video. In *Proc. CVPR Workshop on Media Forensics (CVPRW)*, Honolulu, Hawaii, July 26, 2017.
- [5] C. Xing, **C. Long**, H. Guo, Y. Nie, Y. Zhang, D. Zhu, Q. Ma, M. Tian. How Does A Camera Look at One 3D CAD Object? In *Proc. ICTAI*, Boston, MA, USA, Nov 6-8, 2017.
- [6] Y. Nie, X. Cao, **C. Long**, P. Li, G. Li, H. Sun. Refining Sparse Landmarks to Continuous and High-Quality Face Contour. *IEEE Trans. On Image Processing (TIP)*, 2017 (*Under review*).
- [7] Y. Nie, X. Cao, **C. Long**, P. Li, G. Li. L2GSCI: Local to Global Seam Cutting and Integrating for Pixel-Level Face Contour Extraction. *arXiv*, 2017 (*Cite as arXiv:1703.01605*).
- [8] **C. Long**, G. Hua, A. Kapoor. A Joint Gaussian Process Model for Active Visual Recognition with Expertise Estimation in Crowdsourcing. *International Journal of Computer Vision (IJCV)*, 116(2): 136-160, 2016 (*Top 2 journal*).

- [9] **C. Long**, G. Hua. Multi-class Multi-annotator Active Learning with Robust Gaussian Process for Visual Recognition. In *Proc. ICCV*, Santiago, Chile, Dec 13-16, 2015 (*Acceptance: 19.62%*).
- [10] **C. Long**, X. Wang, G. Hua, M. Yang, Y. Lin. Accurate Objection Detection with Location Relaxation and Regionlets Re-localization. In *Proc. ACCV*, Singapore, Nov 1-5, 2014. (*Acceptance: 27.0%*)
- [11] J. Zhao, **C. Long**, et al. A New K Nearest Neighbors Search Algorithm Using Cell Grids for 3D Scattered Point Cloud. *ELEKTRONIKA IR ELEKTROTECHNIKA*, 20(1): 81-87, 2014.
- [12] **C. Long**, G. Hua, A. Kapoor. Active Visual Recognition with Expertise Estimation in Crowdsourcing. In *Proc. ICCV*, Sydney, Australia, Dec 3-6, 2013. (*Acceptance: 27.8%*)
- [13] G. Hua, **C. Long**, M. Yang, Y. Gao. Collaborative Active Learning of a Kernel Machine Ensemble for Recognition. In *Proc. ICCV*, Sydney, Australia, Dec 3-6, 2013. (*Acceptance: 27.8%*)
- [14] J. Zhao, Y. Ding, RS Goonetillek, S. Xiong, Y. Zhang, **C. Long**, et al. Interactive Deformation Simulation of Manual Girth Measurement for Limbs. *Information*, 15: 339, 2012.
- [15] J. Zhao, Y. Zhang, Y. Ding, **C. Long**, et al. Accelerated Gaussian Mixture Model and Its Application on Image Segmentation. In *Proc. ICGIP*, Singapore, October, 2012.
- [16] **C. Long**, J. Zhao, et al. A New Region Growing Algorithm for Triangular Mesh Recovery from Scattered 3D Points. *Transactions on Edutainment VI, LNCS*, 6758: 237-246, 2011.
- [17] Y. Zhao, J. Zhao, J. Huang, S. Han, **C. Long**, et al. Contourlet Transform Based Texture Analysis for Smoke and Fog Classification. *Applied Mechanics and Materials* 88(89): 537-542, 2011.
- [18] Y. Ding, J. Zhao, Z. Yuan, Y. Zhang, **C. Long**, et al. Constrained Surface recovery using RBF and its efficiency improvements. *Journal of Multimedia*, 5(1): 55-62, 2011.
- [19] **C. Long**, J. Zhao, et al. Transmission: A New Feature for Computer Vision Based Smoke Detection, *AICI 2010, Part I, Lecture Notes in Artificial Intelligence*, 6319: 389-396, 2010.
- [20] Z. Yuan, Y. Zhang, J. Zhao, Y. Ding, **C. Long**, et al. Real-time Simulation for 3D Tissue Deformation with Cuda Based GPU Computing. *Journal of Convergence Information Technology* 5(4): 209-119, 2010.
- [21] Y. Ding, J. Zhao, RS Goonetilleke, S. Xiong, Z. Yuan, Y. Zhang, **C. Long**. An Automatic Method of Measuring Foot Girths for Custom Footwear Using Local RBF Implicit Surfaces. *International Journal of Computer Integrated Manufacturing* 23(6): 574-583, 2010.
- [22] **C. Long**, J. Zhao, et al. Improvements on IPD Algorithm for Triangular Mesh Reconstruction from 3D Point Cloud, In *Proc. MINES*, Pages 305-308, 2009.
- [23] Y. Zhang, J. Zhao, Z. Yuan, Y. Ding, **C. Long**, et al. Cuda Based GPU Programming to Simulate 3D Tissue Deformation. In *Proc. ICBECS*, 2010.
- [24] J. Huang, J. Zhao, W. Gao, **C. Long**, et al. Local Binary Pattern Based Texture Analysis for Visual Fire Recognition, In *Proc. CISP*, 1887-1891, 2010.
- [25] J. Zhao, **C. Long**, et al. A New K-Nearest Neighbors Search Algorithm Based on 3D Cell Grids. *Geomatics and Information Science of Wuhan University*, 34(5):615-618, 2009.

- [26] L. Rao, J. Zhao, Z. Yuan, **C. Long**, et al. A Ray-based Method for 3D Model's Comparison by Genetic Algorithm, *Journal of Advances in Systems Science and Applications*, 9(3): 580-586, 2009.
- [27] Y. Ding, J. Zhao, **C. Long**, et al. Measurement Simulation on RBF Surface Reconstruction from 3D Point Cloud. *Geomatics and Information Science of Wuhan University*, 33: 90-92, 2008.
- [28] Y. Ding, J. Zhao, Y. Zhang, **C. Long**, et al. Efficiency Improvements for RBF Based Surface Measurement from 3D Point Cloud. In *Proc. IITA*, 733-736, 2008.
- [29] Y. Ding, J. Zhao, Z. Li, A. Yao, L. Rao, **C. Long**. Improvements on Electric Field Based Curve Reconstruction from Unorganized Points. In *Proc. Intelligent Information Technology Application Workshop*, 218-221, 2007.
- [30] Y. Ding, J. Zhao, RS Goonetilleke, L. Rao, A. Yao, **C. Long**. Partial Surface Reconstruction and Applications from Point Cloud Using RBF. *Journal of Computational Information Systems*, 3(6):2479-2485, 2007.

PATENTS

- [P1] J. Zhao, **C. Long**, D. Zhang, Z. Yuan. Smoke and fire object segmentation method aiming at smog covering scene in fire disaster image video. Application No.: CN201210040236, Publication No.: CN102609710B, Filed on Feb 22, 2012.

HONORS

- * Marquis Who's Who in America (top 3% of the professionals in America), 2016.
- * Certificate of Reviewing Award, Computer Vision and Image Understanding (CVIU), Aug, 2016.
- * Publishing Pro Merit Badge, Kitware Inc., 2016.
- * Scholarship from Chinese Mao Economic Promotion Association, 2011.
- * Outstanding Graduate with Master Degree of Wuhan University, 2011.
- * First Prize of Academic Research Grant Award in Hubei Province, 2009.
- * Outstanding Graduate with Bachelor Degree of Wuhan University, 2009.
- * Excellent Bachelor Degree Thesis in Hubei Province, 2009.
- * Citibank's Scholarship from Citi Group, 2008.
- * National Scholarship from Ministry of Education of the P.R. China, 2006.
- * 1st/2nd Scholarship from Wuhan University, 2006-2011.
- * Outstanding Student at Wuhan University, 2006-2011.

ACADEMIC ACTIVITIES

Reviewer for International Journals & Conferences:

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Salt Lake, Utah, USA, June 18-22, 2018.
- 2018 IEEE International Conference on Multimedia and Expo (ICME), San Diego, USA, July 23-27, 2018.
- IEEE Transactions on Image Processing (TIP), 2016&2017.
- Computer Vision and Image Understanding (CVIU), 2016&2017.
- International Journal of Machine Vision and Applications (MVAP), 2015&2016&2017.
- Frontiers of Information Technology & Electronic Engineering (ZUSC), 2015&2016&2017.
- The Visual Computer (TVCJ), 2015&2016&2017.
- Journal of Visual Communication and Image Representation (JVCI), 2017.
- Knowledge-Based Systems (KNOSYS), 2018.

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Salt Lake City, Utah, USA, June 18-22, 2018.
- IEEE International Conference on Multimedia and Expo (ICME), San Diego, USA, July 23-27, 2018.
- The 2017 ACM Multimedia Conference (ACM MM), Mountain View, CA, USA, Oct 23-27, 2017.
- IEEE International Conference of Computer Vision (ICCV), Venice, Italy, Oct 22-29, 2017.
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Honolulu, Hawaii, USA, July 21-26, 2017.
- IEEE International Conference on Image Processing (ICIP), Beijing, China, Sept 17-20, 2017.
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), New Orleans, USA, Mar 5-9, 2017.
- IEEE International Conference on Multimedia and Expo (ICME), Hong Kong, China, July 10-14, 2017.
- IEEE Multimedia (MM), 2016&2017.
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2016&2017.
- IEEE International Conference on Image Processing (ICIP), Phoenix, Arizona, USA, Sept 25-28, 2016.
- IEEE International Conference on Multimedia and Expo (ICME), Seattle, USA, July 11-15, 2016.
- IEEE International Conference of Computer Vision (ICCV), Santiago, Chile, December 11-18, 2015.
- The 26th British Machine Vision Conference (BMVC), Swansea, UK, September 7-10, 2015.
- 7th IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS), Arlington, Virginia in the Washington, DC, September 8-11, 2015.
- IEEE International Conference on Multimedia and Expo (ICME), Torino, Italy, June 29-July 3, 2015.
- 11th IEEE Workshop on Perception Beyond the Visible Spectrum (PBVS), Boston, MA, June 11th, 2015 (in conjunction with IEEE CVPR 2015).
- International Workshop on Biometrics in the Wild (B-Wild), Ljubljana, May 8, 2015 (in conjunction with IEEE FG 2015).
- European Conference on Computer Vision (ECCV), Zurich, September 6-12, 2014.
- The 12th Asian Conference on Computer Vision (ACCV), Singapore, November 1-5, 2014.
- IEEE International Conference on Multimedia and Expo (ICME), Chengdu, China, July 14-18, 2014.

Invited/Contributed Talks:

- “How Does A Camera Look At One 3D CAD Object?”.
 - ◊ *The International ICTAI Conference (Boston, MA)* *Nov 6-8, 2017.*

- “A C3D-based Convolutional Neural Network for Frame Dropping Detection in a Single Video Shot”.
 - ◊ *CVPR Workshop on Media Forensics (Honolulu, HI)* July 26, 2017.
- “Dropped Frame Detection”.
 - ◊ *DARPA Medifor Sept Site Meeting (Clifton Park, NY)* Sept 29, 2017.
 - ◊ *DARPA Medifor Year-1 PI Meeting (Arlington, VA)* June 26, 2017.
- “Collaborative Active Learning from Crowds and Deep Learning for Visual Recognition”.
 - ◊ *China Agricultural University.(Beijing, China)* Jan 16, 2017.
- “Collaborative Gaussian Processes for Visual Recognition”.
 - ◊ *Stevens Institute of Technology (Hoboken, NJ)* Oct 6, 2015.
 - ◊ *Kitware Inc.(Clifton Park, NY)* Nov 12, 2015.
 - ◊ *Samsung Semiconductor Inc.(San Diego, CA)* Nov 4, 2015.
 - ◊ *Blippar (Mountain View, CA)* Dec 23, 2015.
 - ◊ *Siemens Healthcare (Princeton, NJ)* Dec 13, 2015.
- “Deep Learning to Fine Camera Pose Estimation Based on CAD Model”.
 - ◊ *Stevens Institute of Technology (Hoboken, NJ)* Sep 15, 2015.
 - ◊ *GE Global Research (Niskayuna, NY)* Aug 21, 2015.
- “Correlational Gaussian Processes for Cross-domain Visual Recognition”.
 - ◊ *Stevens Institute of Technology (Hoboken, NJ)* Dec 9, 2014.
- “Location Relaxation for Efficient and Accurate Object Detection”.
 - ◊ *Stevens Institute of Technology (Hoboken, NJ)* May 28, 2014.
- “From Analyzing to Modeling Crowds: A Collaborative Active Learning Approach to Computer Vision”.
 - ◊ *Stevens Institute of Technology (Hoboken, NJ)* Nov 11, 2013.
- “Accurate Object Detection with Selective Search”.
 - ◊ *Stevens Institute of Technology (Hoboken, NJ)* Aug 28, 2013.
 - ◊ *NEC Laboratories America (Cupertino, CA)* Aug 21, 2013.

LANGUAGES Mandarin Chinese & English.

SKILLS **Programming Languages/Libraries:** C++, C, C#, Java, Python, M, R, PHP, HTML, JavaScript, Latex, OpenGL, OpenCV, OpenMP, Vifeat, OpenGM, libDAI, Intel MKL, Drect3D, Boost C++ Libraries, Caffe, TensorFlow, PyTorch, VTK, OGRE 3D, Gazebo, Ignition, Eigen, SDFFormat, assimp, FreeImage.

Development Tools: Microsoft Visual Studio.net, G++/GCC/Vim, CMake, Matlab, RStudio, NetBeans, Eclipse, ParaView, Delcam CopyCAD and MeshLab.

Development Platforms: Windows, Linux, Mac OS X, Windows Mobile, Cuda.

CITIZENSHIP China, O-1 Visa in America.

MEMBERSHIP Member, the IEEE. Mar 2012 - present