CONGCONG LI

School of Electrical and Computer Engineering   http://chenlab.ece.cornell.edu/people/congcong/

Cornell University, Ithaca, NY 14850   Phone: 814.441.5768   Email: cl758@cornell.edu

OBJECTIVE: Full-time research position in computer vision, machine learning, and multimedia analysis.

EDUCATION

CORNELL UNIVERSITY Ithaca, NY   Advisor: Tsuhan Chen
Ph.D. Candidate in Electrical and Computer Engineering, GPA: 4.30(A+)   Sep. 2009 - May. 2012 (expected)
Minor in Computer Science
Thesis: "Learning Contextual Cues for Holistic Scene Understanding"
Thesis Committee: Tsuhan Chen(Advisor), Thorsten Joachims, Ashutosh Saxena, Alexander C. Loui

CARNEGIE MELLON UNIVERSITY Pittsburgh, PA   Advisor: Tsuhan Chen
Ph.D. Candidate in Electrical and Computer Engineering, GPA: 4.00   Aug. 2007 - Aug. 2009 (transferred)

TSINGHUA UNIVERSITY Beijing, China   Advisor: Guangda Su
M.S. in Electronic Engineering (Honorable Graduate), GPA: 3.80   Aug. 2005 - Jul. 2007
Thesis: "Face Reconstruction and Recognition based on 2D Multi-images"

TSINGHUA UNIVERSITY Beijing, China
B.E. Major in Electronic Engineering, *Minor* in English, GPA: 3.75   Sep. 2001 - Jul. 2005

RESEARCH EXPERIENCE

Holistic Scene Understanding   Cornell University, 2009.10-present
- Proposed a generic model (together with learning and inference techniques) to jointly optimize multiple scene understanding tasks, while requiring only a `black-box' interface for each task. The model allows feedback in a cascade, and can be applied to heterogeneous datasets. [**NIPS 2010 / TPAMI 2012**]
- Evaluated the algorithm on six vision tasks (scene categorization, object detection, depth estimation, etc.), robotic applications, and video surveillance applications. [**ICIP 2011 / ICRA 2011 / ECCV 2010 Workshop**]
- Built a robotic assistive system with the proposed algorithm: http://www.youtube.com/watch?v=ZiSLHJHczvA
- Project page: http://chenlab.ece.cornell.edu/projects/FECCM/

Contextual Modeling   Cornell University, 2010.9-present
- Proposed an efficient algorithm to automatically discover groups of objects that capture high-order interactions between objects and better explain scenes. **[CVPR 2012]**
- Proposed a granularity-adaptive contextual cue that exploits unlabeled regions in images, to capture different types of contextual interactions (scene, inter-object, intra-object, etc.); formulated the context extraction as an object detection problem, allowing the proposed cue to be extracted by any off-the-shelf object detection algorithm. Project page: http://chenlab.ece.cornell.edu/projects/AdaptiveContext/ [**ICCV 2011**]
- Proposed a Markov Random Field (MRF) over the parameters to capture the spatial and semantic interactions between related classifiers. Achieved state-of-the-art performance in two settings: multi-class object detection and multi-task scene understanding. [**NIPS 2011**]

Aesthetic Visual Quality Assessment of Digital Media   Carnegie Mellon/Kodak/Cornell, 2007-present
- Proposed computational features and attributes to represent the aesthetic visual quality of an image. **[ICIP 2010]**
- Proposed a learning framework to assess the aesthetic visual quality of digital images. [**IJSTSP / ICIP 2010**]
- Built a system that automatically assesses a photo's aesthetic quality, improves a photo's composition, and performs photo album distillation. [**Multimedia 2010**] Demo: http://chenlab.ece.cornell.edu/projects/aesthetics/

Key Frame Extraction, and Video Summarization   Carnegie Mellon University, 2008.9-2008.12
- Proposed a motion-focusing method to extract key frames and construct summary image for surveillance videos.
- Provided a new method to visualize the spatial and temporal relationship between moving objects. [**ICIP 2009**]

Face Recognition Related Research   Tsinghua University, 2005-2007
- Implemented the image preprocessing module and the performance validation module in THU2005 Face Recognition System (**Gold Award** in 15th China Invention Exhibition). [**ICB 2006 / ICMLC 2005 / CIS 2005**]
- Proposed a face reconstruction and recognition algorithm based on multiple pose-variant face images, to solve the pose variance problem in face recognition. [**ICB 2007**]
- Proposed Gabor-Combined feature and Gray-Intensity feature Fusion (GCGIF) algorithm for face recognition. [**ICCV2007 AMFG Workshop**]
- Served in the drafting committee for a national standard: "GA/T 893-2010 Terms for biometric recognition in security and protection systems".

PUBLICATION

Book & Journal Papers:
- **Congcong Li**, Tsuhan Chen. "*Visual Aesthetic Quality Assessment of Digital Images.*" Chapter in Book: Perceptual Digital Image: Methods and Applications. To be published by CRC Press, in 2012.
- **Congcong Li**, Adarsh Kowdle, Ashutosh Saxena, Tsuhan Chen. "*Towards Holistic Scene Understanding: Feedback Enabled Cascaded Classification Models.*" To appear in IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2012.
- **Congcong Li**, Tsuhan Chen. "*Aesthetic Visual Quality Assessment of Paintings.*" IEEE Journal of Selected Topics in Signal Processing (**IJSTSP**), vol. 3, no. 2, pp. 236-253, April, 2009.
- Jun Zhou, Guangda Su, Chunhong Jiang, Yafeng Deng, **Congcong Li**. "*A face and s identity authentication system based on multi-route detection.*" **Neurocomputing**, vol. 70, no. 4-6, pp. 922-931, 2007.

Conference Papers:
- **Congcong Li**, Devi Parikh, Tsuhan Chen. "*Automatic Discovery of Groups of Objects for Scene Understanding.*" In International Conference on Computer Vision & Pattern Recognition (**CVPR 2012**).
- **Congcong Li**, Ashutosh Saxena, Tsuhan Chen. "*θ-MRF: Capturing Spatial and Semantic Structure in the Parameters for Scene Understanding.*" In Neural Information Processing Systems Conference (**NIPS 2011**).
- **Congcong Li**, Devi Parikh, Tsuhan Chen. "*Exploiting Unlabeled Regions to Extract Adaptive Contextual Cues.*" In International Conference on Computer Vision (**ICCV 2011**).
- **Congcong Li**, Chih-Wei Lin, Shiaw-Shian Yu, Tsuhan Chen. "*Joint Optimization of Background Subtraction and Object Detection for Night Surveillance.*" In IEEE International Conference on Image Processing (**ICIP 2011**).
- **Congcong Li**, TP Wang, Norris Xu, Ashutosh Saxena. "*FeCCM for Scene Understanding: Helping the Robot to Learn Multiple Tasks.*" In International Conference on Robotics and Automation (**ICRA 2011**).
- **Congcong Li**, Adarsh Kowdle, Ashutosh Saxena, Tsuhan Chen. "*Towards Holistic Scene Understanding: Feedback Enabled Cascaded Classification Models.*" In Neural Information Processing Systems Conference (**NIPS 2010**).
- **Congcong Li**, Alexander C. Loui, Tsuhan Chen. "*Towards Aesthetics: A Photo Quality Assessment and Photo Selection System.*" In ACM Multimedia Conference 2010 (**Multimedia 2010**).
- **Congcong Li**, Andrew Gallagher, Alexander C. Loui, Tsuhan Chen. "*Aesthetic Visual Quality Assessment of Consumer Photos with Faces.*" In IEEE International Conference on Image Processing (**ICIP 2010**).
- **Congcong Li***, Adarsh Kowdle*, Ashutosh Saxena, Tsuhan Chen. "*A generic model to compose vision modules for holistic scene understanding.*" In First International Workshop on Parts and Attributes (**ECCV 2010 Workshop**). [* indicates equal contribution]
- **Congcong Li**, Tsuhan Chen. "*Motion-focusing Key Frame Extraction and Video Summarization for Lane Surveillance System.*" In IEEE International Conference on Image Processing (**ICIP 2009**).

- **Congcong Li**, Guangda Su, Yan Shang, Yingchun Li, Yan Xiang. *"Face Recognition Based on Pose-Variant Image Synthesis and Multi-level Multi-feature Fusion."* In Third International Workshop on Analysis and Modeling of Faces and Gestures (AMFG). (**ICCV2007 Workshop**).
- **Congcong Li**, Guangda Su, Yan Shang, Yingchun Li. *"Frontal Face Synthesis Based on Multiple Pose-Variant Images for Face Recognition."* In IEEE International Conferences on Biometrics (**ICB 2007**).
- **Congcong Li**, Guangda Su, Kai Meng, Jun Zhou. *"Technology Evaluations on TH-FACE Recognition System."* In IEEE International Conference on Biometrics (**ICB 2006**).
- Wei Yu, Ahmed Bilal Ashraf, Yao-Jen Chang, **Congcong Li**, Tsuhan Chen. *"3D Augmented Markov Random Field for Object Recognition."* In IEEE International Conference on Image Processing (**ICIP 2010**).
- Kai Meng, Guangda Su, **Congcong Li**, Bo Fu, Jun Zhou. *"A High Performance Face Recognition System Based on a Huge Face Database."* In Fourth International Conference on Machine Learning and Cybernetics (**ICMLC 2005**).
- Jun Zhou, Guangda Su, Yafeng Deng, Kai Meng, **Congcong Li**. *"A Dynamic Face and Fingerprint Fusion System for Identity Authentication."* In International Conference on Computational Intelligence and Security (**CIS 2005**).

Patent:

- Guangda Su, Yan Xiang, **Congcong Li**. "A Face Recognition System and Device based on the Part-based Feature and Gabor-based Feature Fusion Algorithm". CN200810104401.6.

PROFESSIONAL EXPERIENCE

- Summer Intern, Media Technology Laboratories, Gracenote Company, 2010. 6 – 2010. 8
- Summer Intern, Kodak Research Laboratories, Eastman Kodak Company, 2009. 5 – 2009. 8
- Summer Intern, Tsinghua Tongfang Company, Beijing, 2004. 6 – 2004. 8
- Master Student Mentor, Cornell University, 2011. 8 – present (Mentoring Chill Yi-I Chiu)
- Undergraduate Mentor, Cornell University, 2010. 9 – 2011. 2 (Mentoring TP Wang and Norris Xu)
- Research Assistant, Cornell University, 2009. 9 – present
- Research Assistant, Carnegie Mellon University, 2007. 8 – 2009. 8
- Research Assistant, Tsinghua University, 2005. 8 – 2007. 7
- Teaching Assistant, Tsinghua University, 2005. 9 – 2006. 1
- Reviewer:
- Journals: TIP, TMM, SPL, JMIV, JNCA.
- Conferences: ICCV, CVPR, ICML, MMSP, ICME, ICIP, ECCV.
- Membership: Student member of IEEE and ACM, member of SWE

SELECTED HONORS AND REWARDS

- NIPS travel award, 2010
- NSF travel award for Women in Machine Learning Workshop (WiML), 2010
- McMullen Fellowship, Cornell University, Sep. 2009 - present
- Dean's Fellowship, Carnegie Mellon University, Aug. 2007 - Aug. 2009
- Honorable Master Graduate, Tsinghua University, Jul. 2007
- Graduate Scholarship for Overall Excellence, Tsinghua University, 2005 – 2006
- Undergraduate Scholarship for Academic Excellence, Tsinghua University, 2001, 2003
- First-place out of 100,000+ in National College Entrance Exam in Guangxi Province, 2001

COMPUTER SKILLS

- Programming: C/C++, Matlab
- Tools: Matlab, Visual Studio, OpenCV, Photoshop
- Operating System: Windows, Mac OSX

OTHER SKILLS

- Language: Native in Cantonese, Mandarin; Fluent in English
- Painting (specialize in Chinese Painting for *10* years)