

Fengjun (Felix) LV

360 Auburn Way, #21
San Jose, CA 95129
(408) 931-0873

fengjun.lv@gmail.com
<http://vipbase.net/homepage>
U.S. permanent resident

INTERESTS

- ◆ Computer Vision System for Human Computer Interaction and Entertainment
- ◆ Large-scale Image Search
- ◆ Object Detection and Recognition
- ◆ Multi-object Tracking
- ◆ Human Activity Recognition

SUMMARY OF QUALIFICATIONS

- ◆ Solid background in computer vision, video/image processing with strong publication record
- ◆ Hands-on experience in object detection and recognition, multi-object tracking, human motion analysis and activity recognition, camera calibration and background modeling
- ◆ Proficient in C/C++ and Windows programming
- ◆ Experience with Matlab, OpenCV, OpenGL, Leadtools SDK, HTML/XML, Python, Django, Linux, Mac OS, iPhone programming
- ◆ Demonstrated experience in software development, with attention to details such as user interface and speed performance (Please visit vipbase.net for a working example)
- ◆ Work efficiently both independently and in a team

PROFESSIONAL EXPERIENCE

Huawei Technologies (USA), Santa Clara, CA **01/2011 – present**
Senior Staff Researcher

- ◆ Strategic planning for the next generation of telepresence technologies.

NEC Laboratories America, Inc., Cupertino, CA **04/2007 – 01/2011**
Research Staff Member

- ◆ Won the 2010 [ImageNet](http://image-net.org) large scale visual recognition challenge, consisting of 1,000 object categories with more than 1.4 million images. We achieved a 71.8% top 5 hit rate, leading the second place by a large margin of 5.5%. As a key contributor, I
 - Implemented fast low-level image feature extraction and mid-level feature coding modules
 - Authored a web based image semantics search system on trained models using Django framework, as well as an iPhone client app
 - Assisted in building large scale data processing pipeline using Hadoop system
- ◆ Prevailed in the 2009 [PASCAL](http://pascal2009.nyu.edu) visual object classes challenge. Our team outperformed other 32 teams worldwide and won 18 out of a total of 20 classes. As a key contributor, I
 - Invented and coded a super-pixel classification and detection-by-segmentation algorithm, which

not only directly solved the detection and the segmentation task, but also considerably boosted the performance for the classification task

Authored a flexible framework to incorporate different components (image features, classifiers, etc.) developed by different team members effortlessly, which significantly increased the team's productivity

Implemented many other components such as low-level image features, integral images, etc.

- ◆ Proposed "Video AdSense" project (with two other researchers) to automatically tag objects in video streams and received NEC Lab's Seeds and Seeds Sprouting Award
- ◆ Designed and developed a real-time robust multiple human tracking and counting algorithm
Received NEC Lab's FY2007 Technology Commercialization Award in recognition of key contributions to the commercialization of the algorithm, which has been incorporated into two NEC products: FieldAnalyst and Kaoato Surveillance Software by NEC Soft Ltd. (NES)
Worked closely with NES's engineer team and provided technical support
Received Certificate of Appreciation from NES President Norihiko Kunishima for research contribution to NES's FieldAnalyst product
- ◆ Invented a multiple view 3-D human tracking algorithm. U.S. patent pending
- ◆ Authored a framework with great flexibility and extensibility for various video and image processing tasks, which serves as the an ideal developing environment for testing different algorithms developed in the video analysis team
- ◆ Mentored four and co-mentored two summer research interns

University of Southern California, Los Angeles, CA
Research Assistant in Computer Vision Lab

09/2000 – 04/2007

- ◆ Authored a view-invariant human action recognition algorithm that can recognize and segment human actions from a single video sequence regardless of the camera viewpoint
Published in CVPR and has been cited 104 times (according to Google Scholar)
U.S. patent pending
- ◆ Invented a flexible camera calibration technique based on human motion, which serves as an indispensable component in multiple research projects at USC Computer Vision Lab
Featured article of PAMI's September 2006 issue
Two papers have been cited 115 times (according to Google Scholar)
- ◆ Developed a 3-D human action recognition and segmentation algorithm, achieved high recognition rate on both motion capture data and more challenging pose data estimated from real videos
- ◆ Designed and implemented an activity recognition system that can recognize a variety of activities (especially those in surveillance scenarios) with high recognition rate on several public datasets
- ◆ Improved AdaBoost face detection algorithm with feature training, achieved a speed 2.3 times faster than the widely used OpenCV's implementation

HONORS AND AWARDS

- ◆ Winner Award on the ImageNet large scale visual recognition challenge, 2010
- ◆ NEC Lab's Seeds Sprouting Award for proposed project "Video AdSense", 2010
- ◆ NEC Lab's Seeds Award for proposed project "Smarter Meter", 2010

- ◆ Winner Award on the PASCAL visual object classes challenge, 2009
- ◆ NEC Lab's Seeds Award for proposed project "Video AdSense", 2009
- ◆ NEC Lab's FY2007 Technology Commercialization Award, 2008
- ◆ Certificate of Appreciation from NES President Norihiko Kunishima, 2008
- ◆ Full graduate assistantship, Institute for Robotics and Intelligent System, USC, 2000-2007
- ◆ Master Top Graduate Student, Computer Science Dept., USC, 2004

PATENTS AND INVENTIONS

- ◆ Locality Constrained Linear Coding Systems and Methods for Image Classification, U.S. patent application, serial no. 12/822,424, filed on 06/24/2010, pending
- ◆ Fast Image Parsing by Graph Adaptive Dynamic Programming, U.S. patent application, serial no. 12/814,449, filed on 06/12/2010, pending
- ◆ Systems and Methods for Determining Personal Characteristics, U.S. patent application, serial no. 12/790,979, filed on 05/31/2010, pending
- ◆ Automated Single Viewpoint Human Action Recognition by Matching Linked Sequences of Key Poses, U.S. patent application, serial no. 12/483,050, filed on 06/11/2009, pending
- ◆ Efficient Multi-Hypothesis Multi-Human 3D Tracking in Crowded Scenes (Principal Inventor), U.S. patent application, serial no. 60/990,942, filed on 11/29/2007, pending
- ◆ Robust Human Action Detection System, NEC Labs, Invention Record#8072, 2008
- ◆ Human Action Detection in Crowded Scenes, NEC Labs, Invention Record#7064, 2007
- ◆ View Invariant Human Action Recognition and Segmentation System, Invention Disclosure, USC, 2007
- ◆ Human Action Recognition and Segmentation System, Invention Disclosure, USC, 2006

EDUCATION

University of Southern California , Los Angeles, CA	05/2007
Ph.D. in Computer Science (GPA 4.0)	
Tsinghua University , Beijing, China	
M.S. in Computer Science	07/2000
B.E. in Computer Science	07/1998

PUBLICATIONS

Books

- ◆ **F. Lv**, "[Introduction to Image Processing: Algorithms and Programming](#)" (in Chinese), Tsinghua University Press, ISBN 7-302-03523-7/TP.1928, 1999. (Reference book used in the Image Processing course of Computer Science Department, Tsinghua University)

Dissertation

- ◆ **F. Lv**, "Model Based View-Invariant Human Action Recognition and Segmentation", PhD dissertation, University of Southern California, 05/2007

Journal Papers

- ◆ Y. Huang, Q. Liu, **F. Lv**, Y. Gong, D. Metaxas, "Unsupervised Image Categorization by Hypergraph Partition", IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), to appear.
- ◆ **F. Lv**, T. Zhao, R. Nevatia, "Camera Calibration from Video of a Walking Human", IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), vol. 28, no. 9, pp. 1513-1518, Sept., 2006. (Featured article of September 2006 issue)

Conference Papers

- ◆ J. Wang, J. Yang, K. Yu, **F. Lv**, T. S. Huang, Y. Gong, "Locality-constrained Linear Coding for Image Classification", IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2010.
- ◆ Y. Hu, L. Cao, **F. Lv**, S. Yan, Y. Gong, T. S. Huang, "Action Detection in Complex Scenes with Spatial and Temporal Ambiguities", IEEE Conf. on Computer Vision (ICCV), 2009. (oral)
- ◆ M. Yang, **F. Lv**, W. Xu, Y. Gong, "Detection Driven Adaptive Multi-cue Integration for Multiple Human Tracking", IEEE Conf. on Computer Vision (ICCV), 2009.
- ◆ M. Yang, **F. Lv**, W. Xu, K. Yu, Y. Gong, "Human Action Detection by Boosting Efficient Motion Features", IEEE Workshop on Video-oriented Object and Event Classification, in Conjunction with ICCV (VOEC_ICCV), 2009.
- ◆ M. Yang, S. Ji, W. Xu, J. Wang, **F. Lv**, K. Yu, Y. Gong, M. Dikmen, D. J. Lin, T. S. Huang, "Detecting Human Actions in Surveillance Videos", Notebook paper, TREC Video Retrieval Evaluation Workshop, 2009.
- ◆ **F. Lv**, R. Nevatia, "Single View Human Action Recognition using Key Pose Matching and Viterbi Path Searching", IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2007.
- ◆ **F. Lv**, R. Nevatia, "Recognition and Segmentation of 3-D Human Action Using HMM and Multi-Class AdaBoost", 9th European Conf. on Computer Vision (ECCV), 2006.
- ◆ **F. Lv**, X. Song, B. Wu, V. Singh, R. Nevatia, "Left-Luggage Detection using Bayesian Inference", 9th International Workshop on Performance Evaluation of Tracking and Surveillance (PETS-CVPR), 2006.
- ◆ **F. Lv**, R. Nevatia, M. Lee, "3-D Human Action Recognition Using Spatio-Temporal Motion Templates", ICCV Workshop on Human-Computer Interaction (HCI-ICCV), Lecture Notes in Computer Science, Vol. 3766, pp. 120-130, 2005.
- ◆ **F. Lv**, J. Kang, R. Nevatia, I. Cohen, G. Medioni, "Automatic Tracking and Labeling of Human Activities in a Video Sequence", 6th International Workshop on Performance Evaluation of Tracking and Surveillance (PETS-ECCV), 2004.
- ◆ **F. Lv**, T. Zhao, R. Nevatia, "Self-Calibration of a Camera from Video of a Walking Human", 16th International Conf. on Pattern Recognition (ICPR), 2002. (oral)
- ◆ T. Zhao, R. Nevatia and **F. Lv**, "Segmentation and Tracking of Multiple Humans in Complex Situations", IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2001. (oral)
- ◆ **F. Lv**, H. Ai, L. Liang and G. Xu, "Face Detection Based on Skin Color and Template Matching", 1st International Conf. on Image and Graphics (ICIG), 2000.