Houwen Peng

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HIGHLIGHTS

- Hands-on experience on various machine learning and image processing/computer vision projects, including object detection and segmentation, video scene/event understanding, sparse representation, semi-supervised learning, matrix decomposition, graphical model, etc..
- With 4+ years experience in machine learning and computer vision research. Published papers in top-tier international research venues (AAAI, ECCV, ACM MM, TPAMI).
- Solid background in machine learning.

EDUCATION

Ph.D. Student in Computer Science, Temple University, Pennsylvania, USA
Research Assistant & Joint Ph.D. Student — Jan 2015 –
- Advisor: Prof. Haibin Ling (Dept. of Computer & Information Sciences)

Ph.D. Student in Computer Science, Chinese Academy of Sciences, Beijing, China
Research Assistant — Sep 2011 –
- Advisor: Prof. Weiming Hu (National Lab of Pattern Recognition, Institute of Automation)

B.E. in Software Engineering, Dalian Univ. of Tech., Liaoning, China — Sep 2007 – Jul 2011
- Graduated with Honors and Examination-free Recommendation
- Cumulative GPA: 3.78 / 4.00, Rank: 2 / 397

COMPUTER SKILLS

Strong expertise in machine learning and image processing/computer vision projects, hands-on experience in C/C++/Matlab/Python programming for computer vision projects

Research Expertise:

Machine Learning Algorithms:
- Graph-based Semi-supervised Learning
- Classification (Support Vector Machine, Convolutional Neural Network, Random Forest, et al.)
- Graphical Model (Markov Random Field, Conditional Random Field)
- Sparse coding, Manifold learning, etc.

Computer Vision Techniques:
- Salient Object Detection and Segmentation
- Object Detection, Segmentation, Recognition and Tracking
- Video Segmentation and Recognition

Languages and Tools:
- Proficient with C/C++, Matlab, OpenCV, LibSVM
- Experience with Caffe, TensorFlow, VXL, Python, Java, C#

Operating Systems:
- Windows, Linux, Mac OS

SELECTED PUBLICATIONS

JOURNALS

[1] **H. Peng**, B. Li, H. Ling, W. Hu and S. Maybank, "Salient Object Detection via Structured Matrix Decomposition," *IEEE Trans. on Pattern Analysis and Machine Intelligence* (**TPAMI**), **(After Major Review)**, Mar 2015.

CONFERENCES

[1] **H. Peng**, K. Li, B. Li, H. Ling and W. Hu, "Predicting Image Memorability by Multi-view Adaptive Regression," in *Proceedings of ACM Multimedia Conference* (**MM**), Oct 2015.

[2] **H. Peng**, B. Li, W. Xiong, W. Hu and R. Ji, "RGBD Salient Object Detection: A Benchmark and Algorithms," in *Proceedings of the 13th European Conference on Computer Vision* (**ECCV**), Sep 2014.

[3] **H. Peng**, B. Li, R. Ji, W. Xiong, and W. Hu, "Salient Object Detection via Low-rank and Structured-sparse Matrix Decomposition," in *Proceedings of the 27th AAAI Conference on Artificial Intelligence,* (**AAAI Oral**), Sep 2013.

[4] B. Li, W. Xiong, W. Hu and **H. Peng**, "Illumination Estimation based on Blayer Sparse Coding," in *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), Jun 2013.

PROJECT &RESEARCH EXPERIENCE

Research Assistant, Temple University, Pennsylvania, USA

- Video Salient Object Detection and Segmentation May 2015 –
  - Develop a high-order Markov random field model for video salient object detection
  - Build a benchmark dataset for video salient object detection
- Salient Object Segmentation via Convolutional Neural Networks Feb 2015 –
  - Propose a multi-stage convolutional neural networks model
  - Develop a joint localization and detection framework for salient object detection
- Automatic Video Summarization for Surveillance Camera Sep 2015 – Oct 2015
  - Develop a key-frame selection algorithm for video content summarization

Research Assistant, Chinese Academy of Sciences, Beijing, China

- Sparse and Low-rank Matrix Decomposition with Its Applications Jul 2012 – Apr 2015
  - Develop a low-rank and structured-sparse matrix decomposition algorithm
  - Propose a matrix decomposition based framework for salient object detection
  - Achieve competing performance compared with state-of-the-art algorithms
  - Release the source code and provide the comparison experimental results
- 2014 National Specific Audio & Video Detection Contest Jul 2014 – Oct 2014
  - Develop algorithms for video content classification and specific logo detection
  - Enter into the finalist
- RGB-D Salient Object Detection and Segmentation Apr 2013 – Apr 2014
  - Remould the Kinect device to capture well-aligned and accurate RGB-D images
  - Build and Release a large scale RGB-D image dataset for salient object detection
  - Propose a multi-stage RGB-D salient object detection model taking account of low-level feature contrast, mid-level region grouping and high-level priors enhancement
- Video Action Recognition based on Hierarchical Bayesian Model Dec 2010 – May 2011
  - Develop a hierarchical Bayesian model for video action recognition
  - Apply early and late feature fusion strategies to improve the performance

Research Intern, Tsinghua University, Beijing, China

- Semantic Orientation Analysis of User Comments on P&G Products Jun 2010 – Aug 2010
  - Develop a naive Bayesian classification method to analyze the customers' reviews
  - Analyze the effective features and build specific dictionaries for sentiment analysis

HONORS & AWARDS

Excellent Student of University of Chinese Academy of Sciences. (Top 15%)	2015
Outstanding Student & Graduate Award from Liaoning Province (Top 1%)	2011
One of the Top-ten Undergraduate Students in DUT $(\approx 10/25000)$.	2011
Second Prize in China Undergraduate Mathematical Contest in Modeling.	2010
Outstanding Students Award from Dalian City (Top 1%)	2010
China's National Scholarship (Top 2%)	2008–2009

PROFESSIONAL ACTIVITIES

Journal Review:

- IEEE Trans. on Image Processing
- IEEE Signal Processing Letters
- PLOS ONE
- Neurocomputing
- Signal Processing: Image Communication
- Journal of Visual Communication and Image Representation
- KSII Trans. on Internet and Information Systems

Conference Review:

- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) 2015
- IEEE International Conference on Robotics and Automation (ICRA) 2016

INTERESTS

Swimming, Running and Reading

REFERENCES

Prof. Bing Li
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Prof. Haibin Ling
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