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Enming Luo

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EDUCATION **University of California, San Diego**, San Diego, CA 02/2016
PhD in *Electrical and Computer Engineering* (GPA: 3.7/4.0)
Dissertation title: *Statistical and Adaptive Patch-based Image Denoising*
Advisor: *Prof. Truong Q. Nguyen*

Hong Kong University of Science and Technology, Hong Kong, China 08/2009
MPhil in *Electrical and Computer Engineering* (GPA: 10.44/12.00)
Advisor: *Prof. Oscar Au*

Jilin University, Changchun, China 06/2007
BS in *Electrical and Computer Engineering* (GPA: 88.33/100)

EXPERIENCE **Facebook**, Menlo Park, CA 04/04/2016 – Present
Research Scientist

- Apply machine learning and computer vision techniques on big data to detect policy-violating and low-quality ads (using C++, HiveQL, PHP, Python languages)

InterDigital, San Diego, CA 06/20/2012 – 09/21/2012
Intern

- Applied machine learning to design adaptive upsampling algorithms for scalable video coding. One US patent was filed. (using C++ language)

Cisco Systems, Milpitas, CA 06/20/2011 – 09/02/2011
Intern

- Combined adaptive smoothing with saliency detection for teleconferencing video. The adaptive approach reduces noise while preserving edges and salient regions of interest. (using C and Matlab languages)

Applied Science and Technology Research Institute, Hong Kong, China 09/14/2009 – 07/13/2010
Engineer

- Worked on KTA video compression standard, and video processing such as depth estimation, view synthesis and deinterlacing.

University of California, San Diego, San Diego, CA 09/2010 – 02/2016
PhD

- Worked on the image denoising problem by defining *adaptive* and *machine learning-based* approaches. Proposed and designed approaches to adapt large external image databases to fit the statistics of the noisy image for image denoising. (using Matlab(mex) and C(OpenCV) languages)

SKILLS - Experienced with programming languages: Java, C, R, Matlab (excellent), C++, Python, SQL, HiveQL, PHP, System C, HTML (proficient).

- Experienced with development tools: MS Visual Studio, RStudio, Rattle, Eclipse, Netbeans, Py-Dev, Hadoop, LaTeX, VIM.

- Machine learning/data mining techniques:
- Supervised learning: Linear regression (ridge, LASSO, elastic net), decision tree, random forest, boosting, GBDT, logistic regression, support vector machine, neural networks, deep learning.
- Unsupervised learning: k-means, mixture models (EM algorithm), PCA, kNN.

PUBLICATION **E. Luo**, S. H. Chan, and T. Q. Nguyen, “Adaptive Image Denoising by Mixture Adaptation,” *IEEE (Journal) Trans. Image Process. (TIP’16)*, vol. 25, pp. 4489–4503, Jul. 2016.

S. Parameswaran, **E. Luo**, and T. Q. Nguyen, “Patch Matching for Image Denoising using Neighborhood-based Collaborative Filtering,” *IEEE Trans. Circuits Syst. Video Technol. (TCSVT’16)*, Aug. 2015.

E. Luo, S. H. Chan, and T. Q. Nguyen, “Adaptive Image Denoising by Targeted Databases,” *IEEE Trans. Image Process. (TIP’15)*, vol. 24, no. 7, pp. 2167–2181, Jul. 2015.

PUBLICATION S. H. Chan, **E. Luo**, and T. Nguyen, “Adaptive Patch-based Image Denoising by EM-Adaptation,” (Conference) *IEEE Global Conf. Signal and Information Process. (GlobalSIP’15)*, pp. 810–814, Dec. 2015. (Oral Presentation)

E. Luo, S. H. Chan, and T. Nguyen, “Image Denoising by Targeted External Databases,” *IEEE Intl. Conf. Acoustics, Speech, and Signal Process. (ICASSP’14)*, pp. 2450–2454, May 2014. (Oral Presentation and awarded ICASSP Student Travel Grant)

E. Luo, S. H. Chan, S. Pan, and T. Q. Nguyen, “Adaptive Non-local Means for Multiview Image Denoising: Searching for the Right Patches via a Statistical Approach,” *IEEE Intl. Conf. Image Process. (ICIP’13)*, pp. 543–547, Sep. 2013. (Oral Presentation)

E. Luo, S. Pan, and T. Q. Nguyen, “Generalized Non-local Means for Iterative Denoising,” *European Signal Process. Conf. (EUSIPCO’12)*, pp. 260–264, Aug. 2012. (Oral Presentation)

C. Yeung, O. Au, K. Tang, Z. Yu, **E. Luo**, Y. Wu, and S. Tu, “Compressing Similar Image Sets Using Low Frequency Template,” *IEEE Intl. Conf. Multimedia and Expo (ICME’11)*, pp. 1–6, Jul. 2011.

C. Yeung, O. Au, S. Tu, Y. Wu, **E. Luo**, “Multimedia Human Computer Interface for Oriental Calligraphies,” *IEEE Intl. Symp. Intelligent Signal Process. and Communication Systems (ISPACS’13)*, pp. 1–4, Dec. 2010.

Y. Wu, O. Au, **E. Luo**, C. Yeung, and S. Tu, “Image Registration Method based on Local High Order Approach,” *IEEE Intl. Conf. Symposium Circuits and Syst. (ICSCS’09)*, pp. 746–749, May 2009.

E. Luo, O. Au, Y. Wu, and S. Tu, “Encoding Time Reduction for the Enhancement Layer in the H.264/AVC Extension-Spatial SVC,” *Pacific Rim Conf. Multimedia (PCM’09)*, pp. 1263–1268, Dec. 2009.

E. Luo, O. Au, Y. Wu, S. Tu, and C. Yeung, “Motion Vector Predictor Selection for the Enhancement Layer in the H.264/AVC Extension-Spatial SVC,” *Picture Coding Symposium (PCS’09)*, pp. 1–4, May 2009.

E. Luo, O. Au, L. Guo, Y. Wu, and S. Tu, “Embedded Denoising for the H.264/AVC Extension-Spatial SVC,” *IEEE Pacific Rim Conf. Comm., Computers and Signal Process.*, pp. 280–283, Aug. 2009.

Y. Wu, O. Au, **E. Luo**, D. Tu, and L. Yeung, “A Novel Deringing Method Based on Map Image Restoration,” *IEEE Intl. Conf. Multimedia and Expo (ICME’09)*, pp. 217–220, Jun. 2009.

S. Tu, O. Au, Y. Wu, **E. Luo**, and C. Yeung, “A Robust Spatial-Temporal Line-Warping Based Deinterlacing Method,” *IEEE Intl. Conf. Multimedia and Expo (ICME’09)*, pp. 77–80, Jun. 2009.

PATENT J. Dong, **E. Luo**, Y. He, and Y. Yan, “Adaptive Upsampling for Multi-layer Video Coding,” US Patent App. 14/431,978, Sep. 2013.

- SELECTED PROJECTS **Regression/Classification using Unsupervised and Supervised Learning**
- Applied penalized logistic regression to predict Amazon online review rating and helpfulness. Several text mining techniques such as TFIDF are exploited. (Using R and Python for parsing)
 - Applied decision tree on a Weather dataset, random forest on an eBay auction dataset, and k-nearest neighbors on a Bank dataset for classification. (Using R and Rattle)
 - Developed data mining algorithms on an Amazon dataset in Kaggle competition for rating prediction, purchase prediction and review helpfulness prediction. (Using Python)
 - Implemented the k-means algorithm, and the random projection trees with PCA computations using Map-Reduce on AWS. (Using Python with MRJob and MRStep)
- Nonlinear Regression**
- Implemented gradient descent and Newton's method for nonlinear least-squares regression to locate an object given GPS pseudorange data. (Using Matlab)
- RELEVANT COURSES Statistical Learning, Computer Vision I,II,III, Convex Optimization and Applications, Pattern Recognition and Machine Learning, Parameter Estimation, Bayesian Reasoning and Machine Learning, Principles of Artificial Intelligence, Linear Regression in Statistics, Data Analysis using R, Resampling and Bootstrap, Data Mining and Predictive Analytics, Big Data Analytics.
- HONORS AWARDS **University of California, San Diego, San Diego, CA**
- Graduate research assistantship 2011-2015
 - Powell Fellowship recipient 2010-2011
- Hong Kong University of Science and Technology, Hong Kong, China**
- Postgraduate fellowship 2007-2009
- PROFESSIONAL SERVICE **Invited Referee for Journals and Conferences**
- IEEE Transactions on Image Processing (TIP)
 - Optics Express (OE)
 - Journal of Electronic Imaging (JEI)
 - IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
 - IEEE International Symposium on Circuits and Systems (ISCAS)
 - IEEE Signal Processing Letters (SPL)
 - IET Image Processing
 - International Conference on Advanced Technologies for Communications (ATC)
 - SIAM Journal on Imaging Sciences (SIIMS)
 - IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
 - Information Processing Letters (IPL)