

Yue Hu

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Education

Ph.D. in Electrical Engineering, GPA: 4.0	Expected : Dec/2016
University of Maryland, Baltimore County (UMBC) , Baltimore, MD	
Master in Optical Engineering, GPA: 3.6/4	2009
University of Electronic Science and Technology of China, Chengdu, Sichuan China	
B.A. in Electrical Engineering, GPA: 3.7/4	2006
University of Electronic Science and Technology of China, Chengdu, Sichuan China	

Skills

Platforms: Unix, Linux, Windows 7/10

Programming Language: Proficient in C/C++, Python, VBA, MATLAB, Tex

Also basic ability with: MPI, CUDA, Hadoop, Mapreduce, Spark, Graph

Software: MATLAB, COMSOL

Relevant Projects

University of Maryland, Baltimore County	Baltimore, MD
Isolated-word Speech Recognition using HMM	April 2016 - present
<ul style="list-style-type: none">• Used STFT to extract features from input speech signals. Used the Baum-Welch algorithm to train hidden Markov model (HMM) with speech signal.• Obtained 90% accuracy for single speaker.	
Facial Recognition and Object Classification — Topic in Signal Processing	Spring 2016
<ul style="list-style-type: none">• Researched the tensor decomposition in the facial recognition and object classification: Tensor decomposition used to extract features from RGB image. Used Non-negative basis and orthogonal basis. Obtained 99% accuracy for object classification, 90% for the facial recognition.• Studied K-SVD dictionary learning algorithm; wrote Matlab code including sparse coding and dictionary updating to denoise and fill missing pixels on facial images.• Studied/compared accuracy of different classification methods, such as KNN, Neural Network, and SVM.	
Classification using Neural Network, SVM, and K-Mean Clustering— Machine Learning	Spring 2016
<ul style="list-style-type: none">• Studied the Neural Network algorithm and wrote the backpropagation algorithm in MATLAB. Used it in the classification of handwritten digits, the accuracy could reach 95%.• Studied the SVM algorithm and built emails spam filter. Preprocessed emails and feature extraction. Used training data to train the SVM classifier. Obtained a 98% test accuracy using test data.• Wrote k-mean clustering Matlab code and applied to image compression.	
Blind Sources Separation — Probability and Random Processing	Fall 2012
<ul style="list-style-type: none">• Studied ICA algorithm to implement Blind Source Separation (BSS), such as speech separation, and image separation.• Applied our ICA model to separate mixing images, and mixing speeches. Speeches and images were separated.	
University of Electronic Science and Technology of China	Chengdu, Sichuan
Electrical Engineering Intern in China Wanate, Chengdu, China	Summer 2008
<ul style="list-style-type: none">• Independent designed a auto-fan control system used in an underground garage. Designed a system to control the fans at different position based on the concentration of CO. This system is widely used in more than 100 garages.	
Electrical Engineering Intern in China Unicom, Chengdu, China	Summer 2007
<ul style="list-style-type: none">• Participated in a base station monitoring system in a group of 5 people• Designed a VB software to receive and process the information from the monitoring system	
Electrical Engineering Intern in Chengdu Institute of Measurement, Chengdu, China	Spring 2006
<ul style="list-style-type: none">• Build a VB software to receive data from a measure system using RS232 communication and to generate a report automatically to increase the efficiency	

Research Experience

- University of Maryland, Baltimore County Baltimore, MD
Research Assistant – Computer Science and Electric Engineering Department June 2011 - present
- Developed 1D/2D modified drift-diffusion models using Matlab to study nonlinearity in high current and high speed photodetectors used in the RF photonics. Finite difference method and finite element method were used to solve the equations.
 - Designed a equivalent circuit model of a p-i-n photodetector to study nonlinearity and frequency response of a high speed photodetector.
 - Used high performance computing/parallel computing (MPI and CUDA in the cluster Maya) to solve partial differential equation, such as drift-diffusion equations.
 - Studied frequency response of high speed photodetectors using modified drift-diffusion model to determine the bandwidth and response time of photodetector; Provided suggestions to modify the structure of the photodetector to improve the bandwidth.
 - Modeled heat in the device to determine heat sink performance.
- Teaching Assistant – Computer Science and Electric Engineering Department** August 2010 - May 2011
- Instructed/mentored undergraduate students in circuit design concepts; Advised students during office hours, graded homework, supervised weekly lab exercises (circuit design class)

Primary Publications

- Y. Hu**, C. Menyuk, M. Hutchinson, V. Urick, K. Williams, “*Impact of the Coulomb interaction on the Franz–Keldysh effect in high-current photodetectors*,” *Opt. Lett.* Vol. 41, pp. 456–459, 2016
- Y. Hu**, T. Carruthers, C. Menyuk, M. Hutchinson, V. Urick, and K. Williams, “*Simulation of a partially depleted absorber (PDA) photodetector*,” *Opt. Express* Vol. 23, pp. 20402–20417, 2015
- Y. Hu**, B. Marks, C. Menyuk, V. Urick, and K. Williams, “*Modeling sources of nonlinearity in a simple p-i-n photodetector*.” *J Lightw. Tech.* Vol. 32, pp. 3710–3720, 2014

Conference Presentations

- Y. Hu**, T. Carruthers, C. Menyuk, M. Hutchinson, V. Urick, and K. Williams, “*Modeling nonlinearity in a modified uni-traveling-carrier (MUTC) photodetector*,” in 2015 IEEE Photonics Conference (IPC), pp.122–123, Oct 2015.
- Y. Hu**, C. Menyuk, M. Hutchinson, V. Urick, and K. Williams, “*Impact of the Coulomb Interaction on the Franz-Keldysh Effect in a High-Current Photodetector*,” in 2015 OSA CLEO, STh3F.6., 2015
- Y. Hu**, C. Menyuk, M. Hutchinson, V. Urick, and K. Williams, “*Modeling nonlinearity in a partially depleted absorber photodetector and a modified uni-traveling carrier photodetector*,” 2014 IEEE Photonics Conference (IPC), pp.206–207, Oct 2014.
- Y. Hu**, C. Menyuk, V. Urick, and K. Williams, “*Sources of nonlinearity in a pin photodetector at high applied reverse bias*,” in 2013 International Topical Meeting on Microwave Photonics (MWP), pp. 282–285, Oct 2013.
- Y. Hu** and C. Menyuk, “*Computational modeling of nonlinearity in a pin photodetector*,” in 2013 International Semiconductor Device Research Symposium (ISDRS), Dec 2013.

Academic Affiliations

- Institute of Electrical and Electronics Engineers Photonic Society 2012-present
 Optic Society of American 2013-present

Honors/Awards

- UMBC Baltimore, MD
 DLS Student Travel Grant from APS 2016
 Travel Grant from GSA, UMBC 2015
 Travel Grant from GSA, UMBC 2014
 Award in CSEE Poster Competition 2012
 UESTC Chendu, China
 People’s Scholarship 2004, 2005, 2007, 2008
 Excellent graduate of SiChuan Province 2006
 Award in China Undergraduate Mathematical Modeling Contest 2004
 National Scholarship 2003