

## Education

- University of California, San Diego** San Diego, CA  
• *Ph.D in Electrical Engineering; GPA:4.0* Aug 2014 - May 2018  
Advisors: Truong Q. Nguyen and Bhaskar D. Rao
- University of Illinois at Urbana-Champaign** Urbana-Champaign, IL  
• *M.S. in Electrical Engineering; GPA:3.78* May 2014  
Advisor: Pierre Moulin
- University of Illinois at Urbana-Champaign** Urbana-Champaign, IL  
• *B.S. in Electrical Engineering; GPA:3.90* May 2012  
*James Scholar, Highest Honors*

## Academic Experience

- Multi-modal Sparse Bayesian Dictionary Learning** San Diego, CA  
• *Research* Jan 2016-Present
  - Developed Bayesian algorithm for learning overcomplete dictionaries for multi-modal datasets
  - Empirically showed that algorithm can leverage multi-modal information to learn better dictionaries
  - Applied algorithm to multi-modal classification problem
- Single Photon Emission Computed Tomography (SPECT)** San Diego, CA  
• *Research* Aug 2016-Present
  - Developing novel SPECT imaging algorithms employing sparse recovery ideas
- Robust Face Recognition** San Diego, CA  
• *Research* Jan 2015-Present
  - Developed novel face recognition algorithm for classifying faces under extremely adverse conditions
  - Extended sparse Bayesian learning framework to model block-sparse signals corrupted by time-varying occlusions
- Sparse Non-Negative Matrix Factorization** San Diego, CA  
• *Research* July 2015-Present
  - Extended sparse Bayesian learning framework to non-negatively constrained data
  - Developed novel sparse non-negative matrix factorization (NMF) framework
- Speech enhancement** San Diego, CA  
• *Research* Sept 2014 – Feb 2016
  - Developed multi-channel audio denoising system using independent vector analysis (IVA), minimum variance distortionless response (MVDR) filtering, and Wiener filtering.
- Kinect Depth Video Compression for Action Recognition** Urbana-Champaign, IL  
• *Master's Thesis* Aug 2012 – May 2014
  - Investigated source coding algorithms for purposes of compressing depth videos while minimizing action recognition performance losses
  - Developed novel depth coding algorithm using supervised clustering
- Activity Recognition from Depth Videos** Urbana-Champaign, IL  
• *Research* Jan 2013 – Mar 2013
  - Formulated and implemented algorithm to perform atomic human activity recognition using a depth sensor
  - Algorithm matched state of the art accuracy levels
- Honors Project Under Supervision of Prof. Paris Smaragdis** Urbana-Champaign, IL  
• *Research* Sept 2011 – Dec 2011
  - Worked on algorithm to change the timbre of a vocal recording using source-filter model

- Worked on vocal source separation algorithm using stereophonic effects

## Industry Experience

- **Qualcomm** San Diego, CA  
*Intern* *May 2015 – Aug 2015*
  - Developed continuous multi-modal authentication system for verifying mobile user's identity
- **Qualcomm** San Diego, CA  
*Intern* *May 2013 – Sept 2014*
  - Implemented Fast Stereo Independent Vector Analysis (IVA) algorithm in MATLAB
  - Developed a real time version of Fast Stereo IVA
  - Currently working on a real-time fixed-point C implementation of Fast Stereo IVA
- **Qualcomm** San Diego, CA  
*Intern* *Jun 2012 – Aug 2012*
  - Introduced and implemented novel speech processing techniques (NMF) into existing corporate effort
  - Designed Voice Activity Detector (VAD) using NMF
  - Developed a rapid prototype for NMF VAD in MATLAB
  - Collaborated with subject matter experts, including an assessment of embedded adaptation of NMF VAD
  - Investigated real-time and normalized variants of NMF
  - Implemented Boll spectral subtraction algorithm in fixed-point C
- **Cisco** San Jose, CA  
*Intern* *Jun 2011 – Aug 2011*
  - Implemented testing framework from the ground up for NX-OS
  - Contributed to system test and integration efforts
- **ComEd** Libertyville, IL  
*Intern* *Jun 2010 – Aug 2010*
  - Worked with Transmission and Substation Department in the Testing Group
  - Participated in testing of power equipment

## Publications

- I. Fedorov, A. Nalci, R. Giri, B.D. Rao, T.Q. Nguyen, H. Garudadri, "A Unified Bayesian Framework for Sparse Non-negative Matrix Factorization," arXiv preprint arXiv:1604.02181, 2016.
- I. Fedorov, R. Giri, B.D. Rao, T.Q. Nguyen, "Robust Bayesian Method for Simultaneous Block Sparse Signal Recovery with Applications to Face Recognition." International Conference on Image Processing, 2016.
- A. Nalci, I. Fedorov, B.D. Rao. "Rectified Gaussian Scale Mixtures and the Sparse Non-Negative Least Squares Problem," arXiv preprint arXiv:1601.06207, 2016.
- I. Fedorov, R. Giri, C. Lee, A. Nalci, N. Radmanesh, S. Gadiyaram, B.D. Rao, T.Q. Nguyen, H. Garudadri. "Hearing Protection and Communication in the Presence of Extreme Industrial Noise," Technical Report, 2015.
- I. Fedorov, "Kinect depth video compression for action recognition," Master's thesis, 2014
- A. Khosrowpour, I. Fedorov, A. Holynski, J.C. Niebles, and M. Golparvar-Fard, "Automated Worker Activity Analysis in Indoor Environments for Direct-Work Rate Improvement from long sequences of RGB-D Images," *2014 Construction Research Congress*, May 2014.
- P.S. Shenoy, I. Fedorov, T. Neyens, P.T. Krein, "Power delivery for series connected voltage domains in digital circuits," *2011 International Conference on Energy Aware Computing (ICEAC)*, pp. 1-6, IEEE, 2011

## Skills

Matlab, Python, Theano, C/C++, Fixed point C, LaTeX, Fluent in Russian

## Teaching

WES 267: Intro to Digital Signal Processing, UCSD, Sept 2016-Nov 2016

ECE 161B: Digital Signal Processing, UCSD, Jan 2016-Mar 2016

ECE 445: Senior Design, UIUC, Aug 2012-May 2014

## Honors and Activites

ARCS Fellowship 2015-2016

ECE Departmental Fellowship, University of California, San Diego, 2014

Jules D. Falzer Scholarship for outstanding scholastic record, University of Illinois, 2012

Member of Phi Eta Sigma: National Honor Society, Spring 2009-Present, University of Illinois

University of Illinois Club Tennis Member, Fall 2008 - May 2014