# Igor Fedorov 224-717-0333 ifedorov@eng.ucsd.edu http://ifed-ucsd.github.io/


## Education

- **University of California, San Diego** — San Diego, CA
  *Ph.D in Electrical Engineering; GPA:4.0* — *August 2014 - May 2017*
  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* — *Aug 2012 - 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

- **Robust Face Recognition** — San Diego, CA
  *Research* — *Jan. 2015-Present*
  - Developed novel face recognition algorithm for classifying faces under extremely adverse conditions
  - Extending sparse Bayesian learning framework to model block-sparse signals corrupted by time-varying occlusions

- **Sparse Non-Negative Least Squares** — San Diego, CA
  *Research* — *July 2015-Present*
  - Extended sparse Bayesian learning framework to non-negative 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* — *August 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* — *January 2013 – March 2013*
  - Formulated and implemented algorithm to perform atomic human activity recognition using a depth sensor
  - Algorithm matched state of the art accuracy levels

- **Teaching Assistant** — Urbana-Champaign, IL
  *Senior Design* — *Aug 2012 – May 2014*
  - Oversaw 8 teams per semester of undegraduate electrical engineering students as they completed their capstone projects
  - Head TA for Spring 2014 semester

- **Honors Project Under Supervision of Prof. Paris Smaragdis** — Urbana-Champaign, IL
  *Research* — *Sep 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 – Present*
  - Developing 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," (Submitted) IEEE Transactions on Signal Processing, 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." (Accepted) 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, "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

## Honors and Activites

ARCS Fellowship 2015-2016
ECE Departmental Fellowship, University of California, San Diego, 2014-2015
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