

Luke A. Pfister

CONTACT INFORMATION	802 E. Colorado Ave, Apt A Urbana, IL 61801	<i>Mobile:</i> 309-360-8473 <i>E-mail:</i> lpfiste2@illinois.edu	
EDUCATION	University of Illinois at Urbana-Champaign , Urbana, IL P.h.D., Electrical and Computer Engineering Expected 2017 M.S., Electrical and Computer Engineering August 2013 <ul style="list-style-type: none">• Thesis: <i>Tomographic Reconstruction with Adaptive Sparsifying Transforms</i>• Advisor: Professor Yoram Bresler• GPA: 3.91 Bradley University , Peoria, IL B.S., Electrical Engineering August 2010 <ul style="list-style-type: none">• Senior Project: <i>GPS & IMU Sensor Fusion using the Unscented Kalman Filter</i>• GPA: 3.89• <i>Magna cum Laude</i>		
RESEARCH EXPERIENCE	University of Illinois at Urbana-Champaign <i>Research Assistant</i>	Fall 2013 – Present <ul style="list-style-type: none">• Developing <i>Compressive Mid-Infrared Spectroscopic Tomography</i>- a computationally efficient, chemically specific & label-free optical imaging modality.• Development of highly computationally efficient adaptive sparsifying transforms.• Application of adaptive signal models for low-dose tomographic reconstruction.	
PROFESSIONAL WORK	Rambus Labs <i>Computational Imaging Intern</i>	Summer 2015 <ul style="list-style-type: none">• Developed methods for the design of practical, application-specific diffraction gratings and algorithms for imaging, sensing, feature extraction, and classification with incoherent illumination and low computational cost. InstaRecon, Inc. <i>Engineering Intern</i>	Summer 2013 <ul style="list-style-type: none">• Designed and implemented computationally and memory efficient algorithms for iterative tomographic reconstruction.• Developed Matlab framework for the exploration of iterative tomographic reconstruction algorithms.
PROGRAMMING	CUDA, Python, NumPy/SciPy, C, OpenMP, Shell scripting, MATLAB, MEX,		
TEACHING EXPERIENCE	University of Illinois at Urbana-Champaign <i>Teaching Assistant</i>	Spring 2013 <ul style="list-style-type: none">• ECE 490: Introduction to Optimization – Deliver guest lectures, hold office hours, grade homework and exams.• ECE 210: Analog Signal Processing Fall 2010 – 2012 – Instruct laboratory sections where students construct an AM demodulator. – Supervise 10-12 undergraduate homework graders and hold office hours.	
CONFERENCE PUBLICATIONS	[1] L. Pfister , Y.Bresler, R.Bhargava, and P.S. Carney, “Inverse Scattering with Chemical Composition Constraints for Spectroscopic Tomography”, in Proc. OSA Conference on Mathematics in Imaging, 2016.		

- [2] **L. Pfister**, R. Bhargava, P.S. Carney, and Y. Bresler, “Mid-Infrared Spectroscopic Tomography”, presented at the Gordon Research Conference on Image Science, 2016.
- [3] **L. Pfister**, R. Bhargava, P.S. Carney, and Y. Bresler, “Mid-Infrared Spectroscopic Tomography”, presented at the SIAM Conference on Imaging Science, 2016.
- [4] D.Stork, **L. Pfister**, M. Monjur, and P.R. Gill, “Designing application-specific optical gratings for computational diffractive sensing and imaging”, presented at the meeting of SPIE Defense + Commercial Imaging, 2016.
- [5] **L. Pfister** and Y. Bresler, “Learning Filter bank Sparsifying Transforms,” presented at SPIE Wavelets & Sparsity, San Diego, CA, 2015.
- [6] **L. Pfister** and Y. Bresler, “Model-based Tomographic Reconstruction with Adaptive Sparsifying Transforms,” presented at SPIE Electronic Imaging, San Francisco, CA, 2014.
- [7] **L. Pfister** and Y. Bresler, “Adaptive Sparsifying Transforms for Tomographic Reconstruction”, presented at International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, 2014.
- [8] **L. Pfister** and Y. Bresler, “Linearized ADMM for Tomographic Reconstruction with Adaptive Sparsifying Transforms”, presented at Third International Conference on Image Formation in X-ray Computed Tomography“, Salt Lake City, UT., 2014.
- [9] **L. Pfister** and Y. Bresler, “Model-based Tomographic Reconstruction with Adaptive Sparsifying Transforms,” presented at CSL Student Conference, Urbana, IL, 2014.

JOURNAL
ARTICLES

- [1] **L. Pfister** and Y. Bresler, “Learning Filter Bank Sparsifying Transforms,” submitted to IEEE Transactions on Signal Processing.
- [2] **L. Pfister** R. Bhargava, Y. Bresler, and P.S. Carney, “Inverse Scattering with Chemical Composition Constraints for Spectroscopic Tomography from Highly Undersampled Measurements”, In preparation.

AWARDS

Research

- Andrew T. Yang Research Award for *Compressive Mid-Infrared Spectroscopic Tomography*. **2014 – 2016**
- 2nd Place at IEEE Region 4 Student Paper Contest for *Satellite and Inertial Positioning System* **May 2010**
- 2nd Place at Bradley University Student Scholarship Expo for *Satellite and Inertial Positioning System* **May 2010**

Teaching

- Mavis Future Faculty Fellowship **2014 – 2015**
- E.A. Reid Fellowship for Students Pursuing an Academic Career in Engineering **2014 – 2015**
- Olesen Award for Excellence in Undergraduate Teaching **Fall 2012**
- List of Teachers Ranked as Excellent by Their Students
 - Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012

PROFESSIONAL
SERVICE

Reviewer

IEEE Trans. Comp. Imaging, Optics Express, IEEE Statistical Signal Processing
Workshop, European Signal Processing Conference

Graduate Academy for College Teaching

August 2012

- Instructor for session on Questioning Strategies and Lesson Planning.
- Microteaching session leader.

COURSE
PROJECTS

Inverse Problems in Optics

- *Sparse Solutions to Inverse Problems in Optics*

Digital Imaging

- *Radio Interferometric Imaging using Dictionary Learning*

Vector Space Signal Processing

- *Sparse Recovery by Combined Fusion Frame Measurements in Shift Invariant Spaces*

Wavelets in Signal Processing

- *Adaptive Sparsifying Transforms using the Lifting Scheme*

Numerical Analysis

- *Numerical Properties of Tomographic Reconstruction using Dictionary Learning*

SELECTED
COURSES

Modern Light Microscopy, Inverse Problems in Optics, Digital Imaging,
Wavelets in Signal Processing, Vector Space Signal Processing,
Advanced Digital Signal Processing, Random Processes,
Numerical Analysis, Convex Optimization, Real Variables, Complex Variables