

Gopal Nataraj

CONTACT INFORMATION

Ste. 4125 EECS
University of Michigan
1301 Beal Avenue
Ann Arbor, MI 48109

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RESEARCH INTERESTS

Medical Imaging: from Models, to Algorithms, to Applications
magnetic resonance imaging; statistical signal processing; machine learning

EDUCATION

University of Michigan

Ann Arbor, MI

Ph.D., Electrical and Computer Engineering

05/2014-present

◊ Thesis: Advances in Quantitative MRI:
Acquisition, Estimation, and Applications

◊ Advisors: Prof. Jeffrey A. Fessler and Dr. Jon-Fredrik Nielsen

M.S.E., Electrical and Computer Engineering

08/2012-05/2014

◊ **GPA: 4.00**

◊ **Major:** Signal processing

◊ **Minor:** Biosystems (Biosignals and Imaging)

◊ **Selected Coursework:** Image Reconstruction, Machine Learning, Medical Imaging, Statistical Signal Processing, Perturbation Theory, Statistical Learning Theory, Random Matrix Theory, Partial Differential Equations

Cornell University

Ithaca, NY

B.S., College of Engineering

08/2008-05/2012

◊ **Primary Major:** Electrical and Computer Engineering

– **Major GPA: 3.88**

– **Selected Coursework:** Digital Signal Processing, Probability and Random Processes, Complex Analysis, Feedback Control Theory

◊ **Secondary Major:** Applied and Engineering Physics

– **Major GPA: 3.81**

– **Selected Coursework:** Quantum Mechanics, Electrodynamics, Waves and Optics, Fluid Mechanics, Mathematical Methods in Physics

JOURNAL PAPERS

- [J3] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "Myelin water fraction estimation from optimized steady-state sequences using kernel ridge regression," In preparation
- [J2] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "Optimizing MR scan design for model-based T1, T2 estimation from steady-state sequences," *IEEE Trans. Med. Imag.*, vol. 36, pp. 467–77, Feb. 2017
- [J1] M. A. Noginov, H. Li, Y. A. Barnakov, D. Dryden, G. Nataraj, G. Z. C. E. Bonner, M. Mayy, Z. Jacob, and E. E. Narimanov, "Controlling spontaneous emission with metamaterials," *Opt. Lett.*, vol. 35, no. 11, pp. 1863–5, 2010

CONFERENCE PAPERS

- [C5] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "Myelin water fraction estimation from optimized steady-state sequences using kernel ridge regression," in *Proc. Intl. Soc. Mag. Res. Med.*, p. 5076, 2017

- [C4] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "Dictionary-free MRI parameter estimation via kernel ridge regression," in *Proc. IEEE Intl. Symp. Biomed. Imag.*, 2017. To appear
- [C3] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "A min-max CRLB optimization approach to scan selection for relaxometry," in *Proc. Intl. Soc. Mag. Res. Med.*, p. 1672, 2015
- [C2] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "Model-based estimation of T2 maps with dual-echo steady-state MR imaging," in *Proc. IEEE Intl. Conf. on Image Processing*, pp. 1877–81, 2014
- [C1] G. Nataraj, J.-F. Nielsen, and J. A. Fessler, "Regularized, joint estimation of T1 and M0 maps," in *Proc. Intl. Soc. Mag. Res. Med.*, p. 3128, 2014

TEACHING
EXPERIENCE

WyzAnt, Inc.
Private Tutor

Numerous Locations
05/2012-present

- Independent contractor for leading online tutoring marketplace
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University of Michigan
Graduate Student Instructor

Ann Arbor, MI
09/2015-12/2015

- Junior-level course: Introduction to Probability
- Course instructor: Dr. Achilleas Anastasopoulos

University of Michigan
Graduate Student Instructor

Ann Arbor, MI
01/2015-04/2015

- Sophomore-level course: Introduction to Signals and Systems
- Course instructors: Drs. Jessy Grizzle and Achilleas Anastasopoulos

Cornell University
Physics Tutor

Ithaca, NY
08/2010-05/2012

- Physics Learning Strategies Center
- Manager: Dr. Robert Lieberman
- Tutored students in undergraduate physics courses through private and group-oriented instruction. Gave additional lectures when advisor was unavailable.

Cornell University
Teaching Assistant

Ithaca, NY
01/2010-05/2010

- Freshman-level course: Introduction to Nanoengineering
- Course instructor: Dr. Jon Velazquez
- Laboratory instructor and grader

INDUSTRY
EXPERIENCE

IBM Corporation
Characterization Engineer

Burlington, VT
05/2011-08/2011

- Microelectronics Division, Systems and Technology Group

	<ul style="list-style-type: none"> • Manager: Mr. Michael S. Premsagar • Developed statistical models to improve functional yield prediction of semiconductor products 	
UNDERGRADUATE RESEARCH	California Institute of Technology <i>Student Researcher</i>	Pasadena, CA 06/2010-08/2010
	<ul style="list-style-type: none"> • Laser Interferometer Gravitational-Wave Observatory (LIGO) • Advisors: Prof. Rana Adhikari and Dr. Koji Arai • Mechanical vibration analysis of passive isolation stacks at the Caltech 40-meter Interferometer, for improvement through active isolation in Advanced LIGO 	
	Norfolk State University <i>Student Researcher</i>	Norfolk, VA 06/2009-08/2009
	<ul style="list-style-type: none"> • Center for Materials Research (CMR) • Advisor: Prof. Mikhail A. Noginov • Optical and physical characterization of bulk metamaterials (silver nanorod and alumina composites) for use in invisibility cloaking devices 	
	Carnegie Mellon University <i>Student Researcher</i>	Pittsburgh, PA 06/2007-07/2007
	<ul style="list-style-type: none"> • Pennsylvania Governor's School for the Sciences (PGSS) • Designed and built Wilberforce pendula 	
HONORS AND AWARDS	<ul style="list-style-type: none"> • Rackham Predoctoral Fellowship for Outstanding PhD Research • Towner Prize for Distinguished Academic Achievement • Fellowship, Innovative Signal Analysis, Inc. • First Place, KLA-Tencor Image Processing Contest • Graduated Magna Cum Laude, Cornell University • Scholarship, Irwin and Joan Jacobs, Cornell University • Dean's List, Cornell University (8 semesters) 	04/2017 04/2017 01/2014 04/2013 05/2012 09/2009-05/2012 12/2008-05/2012
PROFESSIONAL SERVICE	<ul style="list-style-type: none"> • Reviewer, Transactions on Medical Imaging • Reviewer, ISMRM conference submissions • President, ECE Graduate Student Council • Judge, Southeastern Michigan high-school science fair 	2015-present 11/2016 04/2014-08/2016 03/2016
AFFILIATIONS	<ul style="list-style-type: none"> • IEEE, Student Member • ISMRM, Student Member 	2013-present 2013-present
COMPUTER SKILLS	<ul style="list-style-type: none"> • OOP: C++, Java • Script: MATLAB, Python • Markup: \LaTeX, HTML, CSS 	