

JOHN McKAY

PHD STUDENT IN ELECTRICAL ENGINEERING @ PENNSYLVANIA STATE UNIVERSITY

104 ELECTRICAL ENGINEERING EAST, STATE COLLEGE PA 16802



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EDUCATION

PENNSYLVANIA STATE UNIVERSITY

PHD IN ELECTRICAL ENGINEERING

Thesis: *Tailored Computer Vision Methods for Synthetic Aperture Imaging*, Advised by Dr. Vishal Monga

STATE COLLEGE, PA

JAN 2015 - (EXPECTED) JULY '18

ARIZONA STATE UNIVERSITY

MASTER'S IN APPLIED MATHEMATICS

TEMPE, AZ

JAN 2013- DEC 2014

UNIVERSITY OF PITTSBURGH

B.S. WITH MAJORS IN PURE MATHEMATICS & AFRICANA STUDIES (3.7 GPA, 3.8 MATH GPA)

PITTSBURGH, PA

AUG 2008 - MAY 2012

RESEARCH BACKGROUND & INTERESTS

DEEP LEARNING WITH ATTENUATED TRAINING, INVERSE FOURIER PROBLEMS, SYNTHETIC APERTURE IMAGE PROCESSING

PERSONAL REFERENCES

DR. VISHAL MONGA

ASSOCIATE PROFESSOR OF ELECTRICAL ENGINEERING, PENN STATE

VMONGA@ENGR.PSU.EDU

DR. ANNE GELB

PROFESSOR OF MATHEMATICS, DARTMOUTH COLLEGE

ANNE.GELB@DARTMOUTH.EDU

DR. YUN KANG

ASSOCIATE PROFESSOR OF MATHEMATICS, ARIZONA STATE UNIVERSITY

YUN.KANG@ASU.EDU

DR. RAGHU G. RAJ

U.S. NAVAL RESEARCH LABORATORY

RAGHU.RAJ@NRL.NAVY.MIL

PUBLICATIONS

DISCRIMINATIVE SPARSITY FOR SONAR ATR

J. McKAY, R. RAJ, V. MONGA, & J. ISAACS, *OCEANS 2015 - MTS/IEEE Washington*, WASHINGTON, DC 2015

LOCALIZED DICTIONARY DESIGN FOR GEOMETRICALLY ROBUST SONAR ATR

J. McKAY, V. MONGA, R. RAJ, *IGARSS*, BEIJING, CHINA 2016

ROBUST SONAR ATR WITH POSE CORRECTED SPARSE RECONSTRUCTION-BASED CLASSIFICATION

J. McKAY, V. MONGA, R. RAJ, *OCEANS 2016 - MTS/IEEE Monterey*, MONTEREY, CA 2016

STUDENT POSTER FINALIST

USING FRAME THEORETIC CONVOLUTIONAL GRIDGING FOR ROBUST SYNTHETIC APERTURE SONAR IMAGING

J. McKAY, ANNE GELB, V. MONGA, R. RAJ, *OCEANS 2017 - MTS/IEEE Anchorage*, ANCHORAGE, AK 2017

STUDENT POSTER FINALIST

WHAT'S MINE IS YOURS: PRETRAINED CNNs FOR LIMITED TRAINING SONAR ATR

J. McKAY, ISAAC GERG, V. MONGA, R. RAJ, *OCEANS 2017 - MTS/IEEE Anchorage*, ANCHORAGE, AK 2017

FAST STOCHASTIC HIERARCHICAL BAYESIAN MAP FOR TOMOGRAPHIC IMAGING

J. McKAY, R. RAJ, V. MONGA, *Asilomar 2017*, PACIFIC GROVE, CA 2017

ROBUST SONAR ATR THROUGH BAYESIAN POSE CORRECTED SPARSE CLASSIFICATION

J. McKAY, V. MONGA, R. RAJ, *IEEE Transactions on Geoscience and Remote Sensing*, 2017

THRESHOLDED FRAME THEORETIC CONVOLUTIONAL GRIDGING FOR STRIPMAP SAR IMAGING

J. McKAY, A. GELB, V. MONGA, R. RAJ, *IEEE Geoscience and Remote Sensing Letters (Under Review)*, 2018

BRIDGING THE GAP: SIMULTANEOUS FINE TUNING FOR IMBALANCED DATA

J. McKAY, I. GERG, V. MONGA, *IGARSS (Under Review, arXiv Available)*, 2018

ALLEVIATING IMBALANCED SONAR ATR TRAINING DATA WITH SIMULTANEOUS TRANSFER LEARNING

J. McKAY, T. VU, I. GERG, V. MONGA, *IEEE Transactions on Geoscience and Remote Sensing (In Preparation)*, 2018

EMPLOYMENT

APPLIED RESEARCH LABORATORY, PENNSYLVANIA STATE UNIVERSITY

GRADUATE RESEARCH ASSOCIATE

- Design deep learning architectures for large-scale Sonar automatic target recognition.

STATE COLLEGE, PA

AUG 2017 - PRESENT

NAVAL RESEARCH LABORATORY

PATHWAYS RESEARCH INTERN

- Developed a coherent approach for noise and blur robust Sonar ATR via tailored sparsely constrained methods.
- Designed a stochastic approach to dramatically speed up a hierarchical Bayesian method for compressive sensing.

WASHINGTON, DC

JAN-APRIL 2017, JUNE 2015-AUG 2015

MANAGEMENT SCIENCE ASSOCIATES	PITTSBURGH, PA
BUSINESS ANALYST	MAY-DEC 2012
<ul style="list-style-type: none"> Developed & managed an agent based model for understanding consumer behavior relating to social media. Collaborated on statistical mixed marketing models for assessing social media's impact on CPC & advertising campaigns. Collaborated on designing hierarchical clustering method for Twitter user segmentation. 	
UNIVERSITY OF PITTSBURGH'S GRADUATE SCHOOL OF PUBLIC HEALTH	PITTSBURGH, PA
UNDERGRADUATE RESEARCH ASSISTANT	AUG 2011-APRIL 2012
<ul style="list-style-type: none"> Tailored an agent based model towards understanding the impact of vaccine refusal in urban settings. 	
MODELING INFECTIOUS DISEASE AGENT STUDY	PITTSBURGH, PA
SUMMER RESEARCH FELLOW	JUNE-AUG 2011
<ul style="list-style-type: none"> Adapted an agent based model towards understanding MRSA epidemiology. 	
MATHEMATICS ASSISTANCE CENTER AT PITT	PITTSBURGH, PA
MATHEMATICS TUTOR	JAN 2010-APRIL 2012

TEACHING ASSISTANTSHIPS

PSU	EE 350, CONTINUOUS LINEAR SYSTEMS (2 SECTIONS)	FALL 2015
PSU	EE 350, CONTINUOUS LINEAR SYSTEMS (2 SECTIONS)	SPRING 2015
ASU	MATH 270, CALCULUS 1 (3 SECTIONS)	FALL 2014
ASU	J. BUSTOZ MATH-SCIENCE HONORS PRGM, INTRO TO MATH BIO (1 SECTION)	SUMMER 2014
ASU	MATH 270, CALCULUS 1 (2 SECTIONS)	SPRING 2014
ASU	PROGRAM TA, MATHEMATICAL & THEORETICAL BIOLOGY INSTITUTE	SUMMER 2013
PITT	MATH 0010, COLLEGE ALGEBRA (2 SECTIONS)	FALL 2010

CONFERENCES & PRESENTATIONS

OCEANS 2017 - MTS/IEEE ANCHORAGE (STUDENT POSTER CONTEST)	ANCHORAGE, AK
"FRAME THEORETIC CONVOLUTIONAL GRIDGING FOR SONAR IMAGING" (POSTER)	
"WHAT'S MINE IS YOURS: PRETRAINED CNNs FOR LIMITED TRAINING SONAR ATR" (TALK)	
DARTMOUTH COLLEGE'S APPLIED MATHEMATICS SEMINAR (INVITED)	HANOVER, NH
"DEEP LEARNING FOR SKEPTICAL MATHEMATICIANS" (TALK)	
UNMANNED MARITIME SYSTEMS TECHNOLOGY PROGRAM REVIEW	MIRAMAR BEACH, FL
"ROBUST SONAR ATR THROUGH BAYESIAN POSE CORRECTED SPARSE CLASSIFICATION" (TALK)	
OCEANS 2016 - MTS/IEEE MONTEREY (STUDENT POSTER CONTEST)	MONTEREY, CA
"ROBUST SONAR ATR WITH POSE CORRECTED SPARSE RECONSTRUCTION-BASED CLASSIFICATION" (POSTER)	
2016 INTERNATIONAL GEOSCIENCE & REMOTE SENSING SYMPOSIUM	BEIJING, CHINA
"LOCALIZED DICTIONARY DESIGN FOR GEOMETRICALLY ROBUST SONAR ATR" (POSTER)	
OCEANS 2015 - MTS/IEEE WASHINGTON	WASHINGTON, DC
"DISCRIMINATIVE SPARSITY FOR SONAR ATR" (TALK)	
BIOMATHEMATICS & ECOLOGY: EDUCATION & RESEARCH	ARLINGTON, VA
"EMERGENT ANTENNATION PATTERNS AMONG & BETWEEN <i>Pogonomyrmex californicus</i> LABOR DIVISIONS" (TALK)	
ATLANTIC ASSOCIATION FOR RESEARCH IN THE MATHEMATICAL SCIENCES WORKSHOP	ST. JOHN'S, NEWFOUNDLAND
"MODELING MINORITY INFLUENCE ON LARGER BEHAVIOR: MEASLES VACCINE REFUSAL & ANT NETWORKS" (TALK)	
SOCIETY FOR MATHEMATICAL BIOLOGY'S ANNUAL CONFERENCE	TEMPE, AZ
"MULTI-SCALE DYNAMIC NETWORK OF SOCIAL INSECTS & THEIR LABOR DIVISION" (POSTER)	
DUBOIS-NKRUMAH-DUNHAM INTERNATIONAL CONFERENCE	PITTSBURGH, PA
"GOING DOWN MEMORY LANE: DIASPORA STUDENTS GIVE ACCOUNTS OF EDUCATIONAL ACHIEVEMENT CHALLENGES" (TALK)	

MENTORING, VOLUNTEER WORK, & MISC

ASU	MENTORED UNDERGRADUATE CHRISTY CONTRERAS IN MATHEMATICAL EPIDEMIOLOGY, SHE WORKED TOWARD & ULTIMATELY PRESENTED AT NONLINEAR DYNAMICS & STOCHASTIC METHODS CONFERENCE.	2013-2014
ASU	VOLUNTEERED WITH SALT RIVER PROJECT, TUTORING DISADVANTAGED YOUTHS IN MATHEMATICS.	2014
MEMBERSHIPS, SIAM, IEEE (INCLUDING OCEANIC ENGR. SOCIETY), SOCIETY FOR MATHEMATICAL BIOLOGY		
PROGRAMMING, R, PYTHON, JAVA, MATLAB, C++, BASH, SAS (STATISTICS)		
POSITIONS, PENN STATE GRADUATE & PROFESSIONAL STUDENT ASSOCIATION ENGINEERING DELEGATE (ELECTED), ARIZONA STATE'S SIAM CHAPTER TREASURER, PITT'S MATH CLUB PRESIDENT		
CO-HOST, DEEP LEARNING WORKSHOP @ PENN STATE		