Tony G. Allen

CONTACT INFORMATION

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EDUCATION

Purdue University **2017-present**

Ph.D. Candidate, Mathematics, GPA: 3.95
Dissertation: Model-Based Coherent Lidar 3D Image Reconstruction
Advisors: Dr. Gregery Buzzard, Dr. Charles Bouman

West Virginia University **2013-2017**

B.S. in Mathematics, GPA: 4.00

JOURNAL PUBLICATIONS

1. **T.G. Allen**, E. Gebhardt, A. Kluball, T.N. Kolba, Minimal noise-induced stabilization of one-dimensional diffusions. *Minnesota Journal of Undergraduate Mathematics, Vol 3(1)*, 2017.

CONFERENCE PROCEEDINGS

4. **T. G. Allen**, D.J. Rabb, G.T. Buzzard, C.A. Bouman, "Fusing machine learning and measurement models," Military Sensing Symposium on Active EO Systems, *Accepted* 2023.
3. **T. G. Allen**, D.J. Rabb, G.T. Buzzard, C.A. Bouman, "I can see clearly now: sub-diffraction limit synthetic aperture lidar," Electronic Imaging, Computational Imaging XXI, 2023.
2. **T. G. Allen**, D.J. Rabb, G.T. Buzzard, C.A. Bouman, "Multi-Agent consensus equilibrium for range compressed holographic surface reconstruction," 21st Coherent Laser Radar Conference, 2022.
1. **T.G. Allen**, E. Gebhardt, A. Kluball, T.N. Kolba, "Noise-Induced stabilization of stochastic differential equations," Poster, Joint Mathematics Meetings, 2016.

TALKS & PRESENTATIONS

7. "Geometric deep learning on graphs and manifolds using mixture model CNNs," Purdue Machine Learning Seminar, 2019.
6. "Building machines that learn and think like people," Purdue Machine Learning Seminar, 2019.
5. "Introduction to neural networks," Purdue Machine Learning Workshop, 2019.
4. "Mastering chess and shogi by self-play with a general reinforcement learning algorithm," Purdue Machine Learning Seminar, 2019 .
3. "The use of graph theory in forensic footwear analysis," NIST SURF Colloquium, 2017.

2. "The size of edge chromatic critical graphs of maximum degree 7," West Virginia University Capstone Day 2017.

1. "Noise-Induced stabilization of stochastic differential equations," Indiana Undergraduate Math Research Conference, July 23, 2015

Professional Service

- Conference session co-chair for Electronic Imaging, Computational Imaging XXI.
- Referee for IEEE Transaction on Computational Imaging.

Research Projects

Model-Based 3D Surface Reconstruction PIs: Dr. Gregery Buzzard[1] , Dr. Charles Bouman[1], Dr. David Rabb[2] [1]Purdue University, [2]Air Force Research Lab.	2019-Present
Graph Theory in Forensic Footwear Analysis PIs: Dr. Martin Herman, Dr. Hariharan Iyer, National Institute of Standards and Technology.	2017
Structure of Edge-Chromatic-Critical Graphs PI: Dr. Rong Luo, West Virginia University.	2015-2017
Noise Induced Stability of Stochastic Differential Equations PI: Dr. Tiffany Kolba, Valparaiso University.	2015

Teaching

Undergraduate Research Mentor	2019
Teaching Assistant, Calculus II	2017-2018
Teaching Assistant, General Physics II	2016
Teaching Assistant, General Physics I	2015

Industry Work

Model Production Intern, Voya Financial	2016

Honors and Awards

NSF Graduate Research Fellowship Honorable Mention	2017
WVU Eberly College of Arts and Sciences Outstanding Senior	2017
WVU Department of Mathematics Outstanding Senior	2017
WVU Eberly Scholar	2016, 2017
Pi Mu Epsilon Member	2015-2017

Graduate Coursework

- ❑ Real Analysis
- ❑ Measure Theory
- ❑ Complex Analysis
- ❑ Abstract Algebra
- ❑ Commutative Algebra
- ❑ Linear Algebra
- ❑ Image Processing I/II
- ❑ RADAR Engineering
- ❑ Convex Optimization
- ❑ Probability
- ❑ Differential Geometry
- ❑ Numerical Analysis
- ❑ Numerical Linear Algebra
- ❑ Computational Optimization
- ❑ Neural Networks
- ❑ Graph Theory
- ❑ Randomized Algorithms
- ❑ Deep Learning

Relevant Skills

Python, Pytorch, Tensorflow, JAX, Git, Matlab, Julia, C/C++