

Alexander Reynolds | Curriculum Vitæ

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Experience

US Air Force Research Laboratory

Dayton, OH

Research Associate II, Sensors Directorate, Layered Sensing Exploitation Division

September 2016–Current

Research position in computer vision at the premier US Air Force research facility. Investigated the propagation of uncertainty in image registration algorithms. Collected and analyzed registration data for evaluation of computer vision algorithms. Developed video stabilization scripts for truthing in machine learning research software. Support from USAF.

Wright State University, US Air Force Research Laboratory

Dayton, OH

Research Intern, Automatic Target Recognition Center

May 2016–August 2016

Summer research position in computer vision. Developed fully Bayesian techniques to obtain consistent uncertainty estimates in georegistration algorithms for UAV video feed. Participated in weekly seminars on computer vision and image processing. Support from DoD and USAF.

Arizona State University

Tempe, AZ

Undergraduate Researcher, School of Mathematical and Statistical Sciences

May 2015–April 2016

Research in applied Fourier analysis; focus in analysis of edge detection methods with spectral data in synthetic aperture radar signals. Participated in weekly group meetings with professors, post-docs, and doctoral candidates from multiple disciplines and attended seminars on applied and computational mathematics. Support from DoD and NSF.

GIK Acoustics

(Remote) Atlanta, GA

Educator, Designer

August 2012–April 2016

Developed acoustic absorbers and diffusors tested at Riverbank (US) and University of Salford (UK), conducted in-situ acoustic measurements using free-field test microphones, designed neutral acoustic spaces for clients, authored articles to disseminate knowledge of room acoustics, and modeled acoustic elements and spaces.

Skills

Languages: Matlab (Image Processing Toolbox, Signal Processing Toolbox, CVX, VGG), Python (NumPy, SciPy, Matplotlib, OpenCV), C/C++ (OpenCV), Java, L^AT_EX, HTML, CSS

Signal Processing: Fourier analysis, edge detection, statistical signal processing, inverse problems, optimization

Computer Vision: Image registration, localization, particle filtering, feature detection, image processing

Acoustics: Acoustic design, architectural acoustics, acoustic measurement and analysis, speech intelligibility

Education

Honors Bachelor of Science, Mathematics

Tempe, AZ

Barrett, The Honors College, Arizona State University, Magna Cum Laude

May 2016

Focus in abstract algebra, scientific computing, and signal processing.

Edge Detection from Spectral Phase Data

Honors Thesis, Barrett, the Honors College

April 2016

Analysis of methods to create edge maps constructed from noisy and intermittent spectral phase data with post-processing techniques. Supervised by Dr. Anne Gelb and Dr. Douglas Cochran, in partial fulfillment for the requirements of a Barrett Honors degree.

Awards and Scholarships

Bidstrup Foundation Research Fellowship: Barrett, the Honors College

Spring 2016

Best Undergraduate Poster: AMS ASU Student Chapter Poster Conference

Spring 2016

Dean's List: Arizona State University

Fall 2014–Spring 2016

President's Scholarship: Glendale Community College

Spring 2009

Projects

Spectral Method PDE Solver (Matlab)

Numerical Analysis II, Arizona State University

Spring 2016

Matlab program to solve second order linear PDEs using the Fourier transform. The program outputs a sequence of solutions at varying time steps and computes the error at the final time step compared to the exact solutions.

Semidirect Products

Intermediate Abstract Algebra, Arizona State University

Spring 2016

Extracurricular paper on semidirect products, complete with motivation, recognition theorems, proofs of various properties of semidirect products, and classifications of groups arising from semidirect products.

Conferences and Presentations

AFRL ATR Center Briefings: Presentation, poster	<i>August 2016</i>
AMS ASU Chapter Poster Conference: Poster (best undergraduate poster)	<i>April 2016</i>
Barrett Celebrating Honors Symposium: Poster	<i>April 2016</i>
Barrett Thesis Defense: Presentation, oral defense	<i>April 2016</i>
ASU SoMSS Thesis Panel: Panel, poster	<i>March 2016</i>
SUnMaRC: Mini-symposium	<i>February 2016</i>
AMS/MAA Joint Mathematics Meetings: Mini-symposium, poster	<i>January 2016</i>

Articles

The Basics of Room Setup: GIK Acoustics http://www.gikacoustics.com/basics-room-setup-acoustic-panels-bass-traps/	<i>September 2014</i>
Understanding Decay Times and Waterfall Plots: GIK Acoustics http://www.gikacoustics.com/understanding-decay-times/	<i>February 2013</i>
Low-Down on Low Frequency Absorbers: GIK Acoustics http://www.gikacoustics.com/understanding-different-bass-trapping/	<i>November 2012</i>

Memberships and Involvement

Professional Societies: AMS, SIAM, IEEE

Academic Clubs: AMS ASU Chapter, Math Club, Software Developers Association

Involvement: ASU Math Day Panel, Barrett Thesis Panel Expo, SUnMaRC, ASU Night of the Open Door

Local Groups: DesertPy, Phoenix JavaScript

References

References available upon request.