

# Eileen R. Martin

she/her

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<b>Academic Appointments</b>	<b>Assistant Professor</b> , Virginia Tech, Blacksburg, VA - Department of Mathematics (primary appointment) - Program in Computational Modeling and Data Analytics	Aug. 2018 - present
	<b>Affiliate</b> , Lawrence Berkeley National Laboratory, Berkeley, CA - Earth and Environmental Sciences Area, Geophysics Department	Sep. 2016 - present
<b>Education</b>	<b>Ph.D. Computational and Mathematical Engineering</b> , <b>Stanford University</b> Dissertation: <i>Passive Imaging and Characterization of the Subsurface with Distributed Acoustic Sensing</i> Readers: Biondo Biondi (advisor), Jonathan Ajo-Franklin, George Papanicolaou	June 2018
	<b>M.S. Geophysics</b> , <b>Stanford University</b> Masters research presentation: <i>Stanford DAS Array: Ambient Noise and Earthquake Recordings</i> Committee: Biondo Biondi (advisor) and Greg Beroza	June 2017
	<b>B.S. Dean's Scholars Honors Mathematics</b> , <b>University of Texas at Austin</b> Dean's Honored Graduate, graduated with high honors Honors thesis: <i>Global Coordinate Systems: Continuously Moving Finite-Dimensional Unit Norm Tight Frames on Smooth Manifolds</i> Advisor: Daniel Freeman (advisor)	May 2012
	<b>B.S. Computational Physics</b> , <b>University of Texas at Austin</b> Graduated with high honors	May 2012
	<b>Luther and Alice Hamlett Junior Faculty Fellow</b> Fellowship in Virginia Tech's Academy of Integrated Science	2019-present
<b>Honors, Awards, Fellowships</b>	<b>Gene Golub Dissertation Award</b> Top dissertation, Institute for Computational and Mathematical Engineering, Stanford	2018
	<b>Best student poster paper at SEG Annual Meeting, co-author</b> Awarded for Huot et al., <i>Automatic Noise Exploration in Urban Areas</i>	2017
	<b>Schlumberger Innovation Fellowship</b>	2016-2017
	<b>DOE Computational Science Graduate Fellowship</b>	2012-2016
	<b>Stanford ICME Student Leadership Award</b>	2014
	<b>NSF Graduate Research Fellowship Program</b> award offered	2012
	<b>Dean's Honored Graduate</b> , UT-Austin College of Natural Sciences	2012
	<b>Barry M. Goldwater Scholarship</b>	2011-2012
	<b>NSF 2034366, Signals in the Soil Program</b> Amount to Virginia Tech: \$216,167 <i>SitS: Collaborative Research: Understand and Forecast Long-term Variations of In-situ Geophysical and Geomechanical Characteristics of Degrading Permafrost in the Arctic</i> PI: M. Xiao (Penn State, Civil & Environmental Engineering), Co-PIs: E.R. Martin, D. Nicolsky (University of Alaska Fairbanks, Geophysical Institute), T. Zhu (Penn State,	

Geosciences), A. Jensen (University of Alaska Fairbanks, Anthropology)  
Period of performance: 1/1/21-12/31/23

**DOE DE-FE0091786, Office of Fossil Energy**

Amount: \$1,874,999 total = \$1,499,999 DOE + \$375,000 non-DOE

*Fully Distributed Acoustic and Magnetic Field Monitoring via a Single Fiber Line for Optimized Production of Unconventional Resource Plays*

Lead PI: G. Pickrell (Virginia Tech, Materials Science and Engineering), PIs: L. Ma (Sentek Instrument LLC), E.R. Martin

Period of performance: 10/1/19-6/30/22

**MAA Tensor Women and Mathematics Grant**

Amount: \$6,000

*SURE: Speakers and Undergraduate Research Engagement*

PI: G. Matthews (Virginia Tech, Math), Co-PI: E.R. Martin

Period of performance: 6/1/21-5/31/22

**Subcontract 4000175567, UT-Batelle, LLC for Oak Ridge National Laboratory**

Amount: \$94,985

*Fast Comparative Algorithms for Sensor Array Summaries*

PI: E.R. Martin

Period of Performance: 11/11/19-8/15/21

**NSF 1937984, Engineering for Civil Infrastructure program**

Amount: \$157,973

*EAGER: Exploration of an Interdisciplinary Approach to Resolving a Critical Issue in Evaluating Liquefaction Hazard of Challenging Soil Sites*

PI: E.R. Martin, Co-PIs: A. Yerro Colom and R. Green (both Virginia Tech Civil & Environmental Engineering)

Period of Performance: 8/1/19-7/31/21

**MAA Tensor Women and Mathematics Grant**

Amount: \$6,000

*SURE: Speakers and Undergraduate Research Engagement*

PI: G. Matthews (Virginia Tech Math), Co-PIs: E.R. Martin and L. Zietsman (Virginia Tech Math)

Period of performance: 6/1/19-5/31/20

**DE-SC0019630, DOE Phase I STTR with Luna Innovations**

Amount to Virginia Tech: \$51,433

*Advanced Computational Methods Towards High-Resolution Fiber Optic Distributed Acoustic Sensing*

PI: D. Rountree (Luna Innovations), Co-PI: E.R. Martin

Period of performance: 2/19/19-11/18/19

**Internal  
Funding**

**Luther and Alice Hamlett Undergraduate Research Support, AIS**

Total amount: \$4,000

*Spring 2019: Data compression for next-generation seismic sensor networks*

*Spring 2020: Footstep removal to protect resident privacy in urban seismology data*

PI: E.R. Martin

Period of performance: 1/14/19-5/23/23

**Luther and Alice Hamlett Junior Faculty Fellowship, AIS**

Amount varies annually depending on investment fund returns.

Period of performance: 8/19 - 7/22

**Seed Grant from Penn State Institute of Energy and the Environment**

Amount: \$50,000 (at Penn State)

*Lighting Up the Subsurface for Tomorrow's City: Initiating a Penn State DAS Array for Mapping Near-Surface Geology*

PI: T. Zhu (Penn State Geosciences), Co-PIs: E.R. Martin, A. Nyblade (Penn State Geosciences), P. Fox (Penn State Civil & Env. Engineering)

Period of performance: 3/1/19-12/31/19

**Articles Under Review**

J. Cooper, **E.R. Martin**, K.M. Yost, A. Yerro, R.A. Green, 2020, *Robust identification and characterization of thin soil layers in cone penetration data by piecewise layer optimization*, under review, code at <https://github.com/jonc7/Soil-Layer-Optimization>

J.Kump, **E.R. Martin**, 2020, *Multichannel Analysis of Surface Waves Accelerated (MASWAccelerated): Software for Efficient Surface Wave Inversion Using MPI and GPUs*, under review, preprint at <https://arxiv.org/abs/2003.02256>, code at <https://github.com/jlk9/MASWA>.

**Journal Articles**

K.M. Yost, R.A. Green, S. Upadhyaya, B.W. Maurer, A. Yerro-Colom, **E.R. Martin**, J. Cooper, 2021, *Assessment of the Efficacies of Correction Procedures for Multiple Thin Layer Effects on Cone Penetration Tests*, Soil Dynamics and Earthquake Engineering, accepted.

N.J. Lindsey, **E.R. Martin**, 2021, *Fiber-optic Seismology*, Annual Reviews of Earth and Planetary Sciences, accepted, preprint at <https://vtechworks.lib.vt.edu/handle/10919/99469>.

T. Zhu, J. Shen, **E.R. Martin**, 2020, *Sensing Earth and Environment Dynamics by Telecommunication Fiber-optic Sensors: An Urban Experiment in Pennsylvania USA*, Solid Earth, accepted, preprint at <https://se.copernicus.org/preprints/se-2020-103/>.

**E.R. Martin**, 2020, *A Linear Algorithm for Ambient Seismic Noise Double Beamforming Without Explicit Crosscorrelations*, Geophysics, accepted, doi: [10.1190/geo2019-0847.1](https://doi.org/10.1190/geo2019-0847.1). Code available at <https://github.com/eileenrmartin/doubleBeamforming>.

G. Fang, Y.E. Li, Y. Zhao, **E.R. Martin**, 2020, *Urban Near-surface Seismic Monitoring using Distributed Acoustic Sensing*, Geophysical Research Letters, 47(6), e2019GL086115.

Z.J. Spica, M. Perton, **E.R. Martin**, G.C. Beroza, B.L. Biondi, 2020, *Urban Seismic Site Characterization by Fiber-Optic Seismology*, Journal of Geophysical Research: Solid Earth, 125(3), e2019JB018656.

**E.R. Martin**, F. Huot, Y. Ma, R. Cieplicki, S. Cole, M. Karrenbach, B.L. Biondi, 2018, *A Seismic Shift in Scalable Acquisition Demands New Processing: Fiber-Optic Seismic Signal Retrieval in Urban Areas with Unsupervised Learning for Coherent Noise Removal*, IEEE Signal Processing Magazine, 35(2), pp. 31-40.

N.J. Lindsey, **E.R. Martin**, S. Cole, D. Dreger, S. James, B. Freifeld, B. Biondi, J. Ajo-Franklin, 2017, *Fiber-Optic Network Observations of Earthquake Wavefields*, Geophysical Research Letters, 44(23), pp. 11792-11799, (featured on cover of issue).

S. Dou, N. Lindsey, A. Wagner, T. Daley, B. Freifeld, M. Robertson, J. Peterson, C. Ulrich, **E.R. Martin**, J. Ajo-Franklin, 2017, *Distributed Acoustic Sensing for Seismic Monitoring of the Near Surface: A Traffic-Noise Interferometry Example*, Scientific Reports, 7, article

11620.

Y. Li, H. Yang, **E.R. Martin**, K.L. Ho, L. Ying, 2015, *Butterfly Factorization*, Multiscale Model. Simul., 13, pp. 714-732.

D. Freeman, R. Hotovy, **E.R. Martin**, 2014, *Moving Finite Unit Norm Tight Frames for  $S^n$* , Illinois J. of Math, 58, pp. 311-322.

#### Professional Periodicals

S. Jakkampudi, J. Shen, W. Li, A. Dev, T. Zhu, **E.R. Martin**, 2020, *Footstep Detection in Urban Seismic Data with a Convolutional Neural Network*, The Leading Edge, 39(9), pp. 654-660.

**E.R. Martin**, 2020, *Research Committee Update: Shining a Light on Cities with Seismic Data*, The Leading Edge, 39(6), pp. 437-437.

**E.R. Martin**, C. Castillo, S. Cole, S. Sawasdee, S. Yuan, R. Clapp, M. Karrenbach, B. Biondi, 2017, *Seismic Monitoring Leveraging Existing Telecom Infrastructure at the Stanford Distributed Acoustic Sensing Array: Active, Passive and Ambient Noise Analysis*, The Leading Edge, 36(12), pp. 1025-1031.

#### Book Chapters

**E.R. Martin**, N.J. Lindsey, B. Biondi, J.B. Ajo-Franklin, *Introduction to Interferometry of Fiber Optic Strain Measurements* accepted to AGU book on DAS. Preprint available at <https://eartharxiv.org/sx9zt/>.

B. Biondi, S. Yuan, **E.R. Martin**, F. Huot, R.G. Clapp, *Using telecommunication fiber infrastructure for earthquake monitoring and near-surface characterization*, accepted to upcoming AGU book on DAS.

#### Conference Papers

F. Huot, **E.R. Martin**, Z. Spica, B. Biondi, *Distributed Acoustic Sensing (DAS) for large-scale urban monitoring and geologic hazard mitigation using preexisting telecommunication infrastructure*, 2019, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, Singapore, 10-12 Dec.

T. Zhu, **E.R. Martin**, J. Shen, *New Signals in Massive Data Acquired by Fiber Optic Seismic Monitoring Under Pennsylvania State University*, 2019, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, Singapore, 10-12 Dec., [preprint](#).

**E.R. Martin**, *Scalable Seismic Acquisition and Algorithms for Next-Generation Engineering Geophysics*, (invited) 2019, International Conference on Engineering Geophysics, Al Ain, United Arab Emirates, 9-12 Oct.

**E.R. Martin**, *A Scalable Algorithm for Cross-correlations of Compressed Ambient Seismic Noise*, 2019, 89th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2019-3216637.1](https://doi.org/10.1190/segam2019-3216637.1)

**E.R. Martin**, B. Biondi, *Eighteen months of near-surface monitoring with ambient noise at the Stanford Fiber Optic Seismic Observatory*, 2018, 88th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2018-2997853.1](https://doi.org/10.1190/segam2018-2997853.1)

F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient-noise processing applied to fiber-optic seismic acquisitions (DAS)*, 2018, 88th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2018-2997880.1](https://doi.org/10.1190/segam2018-2997880.1)

**E.R. Martin** and B.L. Biondi, *Ambient noise interferometry across two-dimensional DAS arrays*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2017-17677759.1](https://doi.org/10.1190/segam2017-17677759.1)

B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, N. Lindsey, *Earthquakes analysis using data recorded by the Stanford DAS array*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2017-17745041.1](https://doi.org/10.1190/segam2017-17745041.1)

F. Huot, Y. Ma, R. Cieplik, **E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts (awarded best student poster paper). doi: [10.1190/segam2017-17774369.1](https://doi.org/10.1190/segam2017-17774369.1)

J.B. Ajo-Franklin, S. Dou, N. Lindsey, T. Daley, B. Freifeld, **E.R. Martin**, C. Ulrich, T. Wood, I. Eckblaw, A. Wagner, M. Robertson, *Timelapse surface wave monitoring of permafrost thaw using distributed acoustic sensing and a permanent automated seismic source*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2017-17774027.1](https://doi.org/10.1190/segam2017-17774027.1)

**E.R. Martin**, B. Biondi, M. Karrenbach, S. Cole, *Ambient noise interferometry from DAS array in underground telecommunications conduits*, 2017, EAGE Annual Meeting Proceedings. doi: [10.1190/segam2017-17774027.1](https://doi.org/10.1190/segam2017-17774027.1)

**E.R. Martin**, B.L. Biondi, M. Karrenbach, S. Cole, *Continuous Subsurface Monitoring by Passive Seismic with Distributed Acoustic Sensors- The "Stanford Array" Experiment*, 2017, Extended Abstracts of the 1st EAGE Workshop on Practical Reservoir Monitoring. doi: [10.3997/2214-4609.201700017](https://doi.org/10.3997/2214-4609.201700017)

**E.R. Martin**, P. Wills, D. Hohl, J.L. Lopez, *Using machine learning to predict production at a Peace River thermal EOR site*, Proceedings of the 2017 SPE Reservoir Simulation Conference. SPE-192696-MS. doi: [10.2118/182696-MS](https://doi.org/10.2118/182696-MS)

**E.R. Martin**, N.J. Lindsey, S. Dou, J.B. Ajo-Franklin, A. Wagner, K. Bjella, T.M. Daley, B. Freifeld, M. Robertson, C. Ulrich, *Interferometry of a roadside DAS array in Fairbanks, AK*, 2016, 86th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2016-13963708.1](https://doi.org/10.1190/segam2016-13963708.1)

**E.R. Martin**, J. Ajo-Franklin, N. Lindsey, T.M. Daley, B. Freifeld, M. Robertson, C. Ulrich, S. Dou, A. Wagner, *Interferometry of ambient noise from a trenched distributed acoustic sensing array*, 2015, 85th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2015-5902207.1](https://doi.org/10.1190/segam2015-5902207.1)

J. Ajo-Franklin, N. Lindsey, T.M. Daley, B. Freifeld, **E.R. Martin**, M. Robertson, C. Ulrich, A. Wagner, *A field test of distributed acoustic sensing for ambient noise recording*, Expanded Abstracts of the 2015 SEG Ann. Internat. Mtg. doi: [10.1190/segam2015-5926936.1](https://doi.org/10.1190/segam2015-5926936.1)

## Technical Reports

**E.R. Martin**, *Eighteen months of continuous near-surface monitoring with DAS data collected under Stanford University*, SEP 172, 2018.

F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient noise processing applied to fiber optic seismic acquisition*, SEP 172, 2018.

**E.R. Martin**, B. Biondi, G. Fabient-Ouellet, R.G. Clapp, *Sensitivity analysis of distributed acoustic sensing arrays*, SEP 170, 2017.

**E.R. Martin**, B. Biondi, *Time-lapse changes in ambient noise interferometry and dispersion analysis at the Stanford DAS Array*, SEP 170, 2017.

- R. Clapp, S. Farris, T. Dahlke, **E.R. Martin**, *C++11 non-linear solver*, SEP 170, 2017.
- E.R. Martin**, B. Biondi, S. Cole, M. Karrenbach, *Overview of the Stanford DAS Array-1 (SDASA-1)*, SEP 168, 2017.
- B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, *Earthquakes analysis using data recorded by the Stanford DAS Array*, SEP 168, 2017.
- E.R. Martin**, B. Biondi, *Ambient noise interferometry on two-dimensional DAS arrays*, SEP 168, 2017.
- F. Huot, Y. Ma, R. Cieplik, **E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, SEP 168, 2017.
- E. Williams, **E.R. Martin**, *Detection and removal of coherent anthropogenic noise from passive seismic data*, SEP 165, 2016.
- E.R. Martin**, N. Lindsey, S. Dou, J. Ajo-Franklin, A. Wagner, K. Bjella, T. Daley, B. Freifeld, M. Robertson, C. Ulrich, *Interferometry of a roadside DAS array in Fairbanks, AK*, SEP 163, 2016.
- E.R. Martin**, J. Ajo-Franklin, N. Lindsey, T. Daley, B. Freifeld, M. Robertson, C. Ulrich, S. Dou, A. Wagner, *Applying interferometry to ambient seismic noise recorded by a trenched distributed acoustic sensing array*, SEP 158, 2015.
- E.R. Martin**, *Compression for effective memory bandwidth use in forward modeling*, SEP 152, 2014.
- E.R. Martin**, R. Clapp, H. Le, C. Leader, D. Nichols, *SEPVector: a C++ inversion library*, SEP 152, 2014.
- M. Denolle, S. de Ridder, J. Chang, **E.R. Martin**, T. Dahlke, H. Arevalo-Lopez, Sr., S. Levin, *Scholte-wave excitation*, SEP 150, 2013.

## Selected Talks

- (Upcoming) *Compressing the computing requirements of fiber optic seismic monitoring*, GAGE/SAGE Virtual Workshop Aug. 2021
- (Upcoming) Caltech Seismo Lab Seminar Apr. 2021
- (Upcoming) IRIS Board of Directors Meeting Feb. 2021
- Overcoming Computational Hurdles in Large-scale Passive Seismology*, Colorado School of Mines Heiland Lecture remote, audience in Golden, CO, Feb. 2021
- Understanding sensitivity of distributed acoustic sensing integrated with velocity data*, AGU Fall Meeting session on Observation of Rotation, Strain and Translation in Seismology - Applications, Instrumentation and Theory (invited) remote, original location San Francisco, CA, Dec. 2020
- Scalable algorithms to pull signals from noise recorded by large sensor networks*, Scientific Computing and Numerics Seminar at Cornell University remote, audience in Ithaca, NY, Nov. 2020
- Passive Seismic Processing with Artificial Intelligence and Scalable Algorithms*, Applied Geophysics Research Seminar at ExxonMobil Upstream Research Company remote, audience in Spring, TX, Aug. 2020
- Scalable algorithms for signal processing and imaging with vibration data*, Mathematics and Computer Science Division at Argonne National Laboratory remote, audience in Lemont, IL, July 2020
- New Methods in Engineering Geophysics: Distributed Acoustic Sensing and Machine Learning*, US Geological Survey Earthquake Science Center Seminar remote, audience in Menlo Park, CA, July 2020
- Urban Seismology with Fiber Optics*, Institute of Geophysics seminar at University of Hamburg remote, audience in Hamburg, Germany, June 2020
- What changes when we use ambient noise recorded by fiber optics?*, EGU General Assembly session: Ambient noise seismology: Topics, targets, tools & techniques (invited) remote, original location Vienna, Austria, May 2020
- New Signals in Massive Data Acquired by Fiber Optic Seismic Monitoring Under Pennsylvania State University*, [SEG/EAGE Workshop on Geophysical Aspects of Smart Cities](#) Singapore, Dec. 2019



*High-throughput seismology: new sensors, new signals, new algorithms*, [Women in Data Science at Stanford Earth](#) (invited) Stanford, CA, Nov. 2019

*Scalable Seismic Acquisition and Algorithms for Next-Generation Engineering Geophysics*, International Conference on Engineering Geophysics (invited) Al Ain, UAE, Oct. 2019

*Seismology at Unprecedented Scale*, BiSEPPS Seminar at Harvard University Cambridge, MA, May 2019

*Fast Algorithms for Ultra-high-resolution Ambient Noise Interferometry*, Solid Earth Brownbag Seminar at Princeton University Princeton, NJ, May 2019

*An Introduction to Seismology with Distributed Acoustic Sensing* (tutorial talk) AGU Fall Meeting, [video of material on YouTube](#) Washington, DC, Dec. 2018

*Beyond cosine squared: understanding trends in passive DAS data*, SEG Annual Meeting Workshop on DAS Anaheim, CA, Oct. 2018

*Pushing for Continuous, Dense, Urban Seismic Monitoring at the Stanford Fiber Optic Seismic Observatory* (plenary talk) IRIS Workshop: Foundations, Frontiers and Future Facilities for Seismology Albuquerque, NM, Jun. 2018

*Scalable seismic monitoring with fiber optics beneath our feet*, Heiland Lecture at Colorado School of Mines Golden, CO, Jan. 2018

*Active and passive recording at the Stanford DAS Array*, SEG Annual Meeting Workshop: DAS, a vision of the future? Houston, TX, 2017

*DAS in existing telecommunications conduits on the Stanford campus*, SPE Workshop on Distributed Fiber-Optic Sensing Denver, CO, 2017

*Urban ambient noise: from dense nodes to DAS*, EAGE Annual Meeting: Workshop on linking active and passive seismics Paris, France, 2017

*Repurposing our Telecommunications Infrastructure for Seismology*, Lawrence Livermore National Laboratory Seismology Seminar Livermore, CA, 2017

*Dirt Cheap Surveys: near surface monitoring with ambient seismic noise collected by DAS*, EAGE Annual Meeting: workshop on reservoir monitoring with distributed fibre-optic sensing Vienna, Austria, 2016

*Near-surface monitoring using DAS + ambient noise*, SEG Annual Meeting: distributed acoustic sensing workshop New Orleans, LA, 2015

## Research Advising

### Graduate Students Supervised

Joseph Kump, Mathematics M.S. student VT, May 2019 - present

Sarah Morgan, Mathematics M.S. student VT, Aug. 2020 - present

Julius Grimm (coadvised), Applied Geophysics M.S. student

Joint program: TU Delft, ETH Zurich, RWTH Aachen, Nov. 2020 - present

### Undergraduate Students Supervised

Samantha Paulus, CMDA and Nanoscience major VT, Spring 2021-present

Firaol Woldemariam, CMDA major VT, Spring 2021-present

Tony Artis, CMDA major VT, Spring 2020-present

Anu Trivedi, Mathematics major VT, Fall 2019-present

Srikanth Jakkampudi, Mathematics and CMDA major VT, Fall 2019-Spring 2020

Sarah Morgan, Mathematics major VT, Fall 2019-Spring 2020

Tarun Nadipalli, CMDA major VT, Spring 2019

Ethan Williams (coadvised, B. Biondi) Geophysics & Music major, Stanford, Summer 2016

### Thesis Committee Member

Nhat Nguyen, Ph.D. student of L. Massa in AOE VT, degree in progress

Zachary Hileman, Ph.D. student of G. Pickrell in MSE VT, degree in progress

ThaoVy Nguyen, M.S. student of R. Hewett in Mathematics VT, degree in progress

Kaleigh Yost, Ph.D. student of R. Green in CEE VT, degree in progress

Amin Baghbadorani, Ph.D. student of J. Hole in Geosciences VT, degree in progress

Taewon Cho, Ph.D. student of J. Chung in Mathematics VT, degree in progress

<b>Teaching</b>	<b>Instructor</b> , BEPUR: Broadening Engagement and Participation in Undergraduate Research (VT, MATH 2984)	Spring 2021
	<b>Instructor</b> , CS Foundations for CMDA (VT, CMDA 3634)	2 sections, Fall 2020
	<b>Instructor</b> , CS Foundations for CMDA (VT, CMDA 3634)	Spring 2020
	<b>Instructor</b> , <a href="#">Extreme-Scale Inverse Problems</a> (VT, MATH 5984)	Fall 2019
	<b>Instructor</b> , Integrated Quantitative Science I (VT, CMDA 2005)	Fall 2019
	<b>Project Mentor</b> , Capstone Project (VT, CMDA 4864)	Fall 2019
	Senior team project on removing footstep signals from urban seismic data	
	<b>Instructor</b> , CS Foundations for CMDA (VT, CMDA 3634)	Spring 2019
	<b>Instructor</b> , Integrated Quantitative Science I (VT, CMDA 2005)	Fall 2018
	<b>ICME Teaching Fellow</b> 2016-2018, status to recognize student teaching experience	
	<b>Course assistant</b> , Intro. to Scientific Computing (Stanford, CME 108)	Winter 2016
	<b>Project Mentor</b> , Projects in App. & Comp. Math (Stanford, CME 181)	Spring 2015
	Undergrad project on statistical analysis of bicycle sharing network data	
	<b>Instructor</b> , Introduction to Scientific Python (Stanford, CME 193)	Winter 2015
	<b>Instructor</b> , Short course on Python at SIAM Conference on Geosciences,	June 2015
	<b>Project Mentor</b> , Projects in App. & Comp. Math (Stanford, CME 181)	Winter 2014
	Undergrad project on tsunami modeling using Hawaiian bathymetry	
	<b>STEM Tutor</b> , Longhorn Center for Academic Excellence	Aug. 2011-May 2012
	UT-Austin Division of Diversity and Community Engagement	
	Tutored students in introductory math, statistics, physics, and chemistry courses	
	Documented tutoring and workshops for grant application materials	
<b>Professional Service, Outreach</b>	<b>Associate editor</b> , <i>Computers &amp; Geosciences</i>	Nov. 2018-present
	<b>Faculty sponsor/organizer</b> , 3rd Women in Data Science Blacksburg at Virginia Tech conference	Nov. 2020-present
	<b>Member</b> , SEG Equity in Process Task Force	Aug. 2020-present
	<b>Committee member</b> , SEG Research Committee	Oct. 2018-present
	<b>Member</b> , Virginia Tech Math Department Colloquium Committee	Aug. 2020 - present
	<b>Member</b> , CMDA Computing Curriculum Committee	Aug. 2018 - present
	<b>Steering Committee Member</b> , NSF DAS Research Coordination Network	
	Co-leader of Machine Learning Working Group	Feb. 2020-present
	Co-leader of RCN-affiliated virtual workshop	
	<b>Co-organizer</b> , <a href="#">Speakers and Undergraduate Research Engagement</a>	Feb. 2019 - present
	Program to guide female undergrad math students through first research projects, and bring diverse women mathematicians for research talks and career path discussions	
	<b>Reviewer</b> : <i>Seismological Research Letters</i> , <i>American Geophysical Union Books</i> , <i>Geophysical Journal International</i> , <i>Geophysics</i> , <i>Computers &amp; Geosciences</i> , <i>Marine Geophysical Research</i> , <i>Journal of Computational Science</i> , <i>Journal of Environmental and Engineering Geophysics</i> , <i>Interpretation</i> , <i>Journal of Open Source Software</i> , <i>PASC Conference</i>	
	<b>Member</b> , DOE CSGF Screening Committee	2020, 2021
	<b>Session Co-Chair</b> , AGU Fall Meeting session on Data Science and Machine Learning for Natural Hazard Sciences	Dec. 2020
	<b>Peer Reviewer</b> , Virginia Tech Department of Mining and Minerals Engineering Academic Program Review	Feb.-Dec. 2020
	<b>Panelist</b> , discussion on women in geosciences for Diversity and Inclusion in Geoscience course at University of Wyoming	Oct. 2020
	<b>Co-Organizer</b> , SEG Annual International Meeting Post-convention Workshop on DAS: Advances in Fiber Optic Sensing Over the Last Decade	Oct. 2020
	<b>Speaker</b> , UT-Austin Dean's Scholars Honors Program Friday Lunch Talk	Sep. 2020
	<b>Co-Lead</b> , DAS Virtual Workshop and Tutorial	Aug. 2020
	Three-afternoon <a href="#">virtual workshop and tutorial</a> supported by DAS RCN and IRIS; 8 speaker presentations with extensive discussion, and 150-250 participants/day;	



	Developed new Jupyter notebooks for hands-on coding with public DAS data; Managed Slack channel for participants to network/discuss with 10 Workshop Guides.	
	<b>Member</b> , Virginia Tech Math Dept. Technology Committee	Aug. 2018 - Aug. 2020
	<b>Judge</b> , Virginia Tech Socially Determined COVID-19 Social Data Project	Apr. 2020
	<b>Faculty sponsor/organizer</b> , 2nd Women in Data Science Blacksburg at Virginia Tech <a href="#">conference</a> (converted to online event with 3 speakers)	Apr. 2020
	<b>Panelist</b> , Virginia Tech Assoc. for Women in Mathematics internship panel	Feb. 2020
	<b>Session co-chair</b> , SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, session on Fiber-based Distributed Acoustic Sensing	Dec. 2019
	<b>Co-Organizer</b> , SEG Annual International Meeting Post-convention Workshop on Real-time Processing for Large-Scale Streaming Seismic Data, <a href="#">agenda</a>	Sep. 2019
	<b>Chair</b> , Session on ‘Distributed Acoustic Sensing: VSP, Modeling and Imaging Approaches’ at SEG Annual International Meeting	Sep. 2019
	<b>Mentor</b> , DOE CSGF <a href="#">High Performance Computing Workshop</a>	Jul. 2019
	<b>Panelist</b> , <a href="#">Early Career Panel</a> , DOE CSGF Annual Program Review	Jul. 2019
	<b>Mentor</b> , Student mentoring program run by Virginia Tech chapter of American Women in Mathematics	Sep. 2018 - May 2019
	<b>Co-Organizer</b> , Session on ‘Photonic and Noninertial Seismology’ at Seismological Society of America Annual Meeting	Apr. 2019
	<b>Speaker</b> , Virginia Tech Undergraduate Math Club	Apr. 2019
	<b>Volunteer</b> , ASA DataFest at Virginia Tech	Apr. 2019
	<b>Faculty sponsor/organizer</b> , <a href="#">1st Women in Data Science conference at VT</a>	Feb. 2019
	<b>Organizer</b> , Session on ‘Computational Advances for Large-Scale Geophysical Data’ at SIAM CS&E	Feb. 2019
	<b>Judge</b> , CMDA Fall Data Competition at Virginia Tech	Nov. 2018
	<b>Panelist</b> , UT-Austin Association for Women in Mathematics career panel	Nov. 2018
	<b>Speaker</b> , UT-Austin Undergraduate Math Club	Nov. 2018
	<b>Special section associate editor</b> , <i>Interpretation</i> Special issue on ‘Distributed Acoustic Sensing and its Oil Field Potential’	2018
	<b>Mentor</b> , ICME first-year mentoring program	Sep. 2017-Jun. 2018
	<b>Co-organizer</b> , Stanford Computational Geosciences Seminar Brought in 9 speakers from outside Stanford, organized 1 hr. course EARTH 310	Jan.-Mar. 2018
	<b>Co-chair</b> , Session on ‘Earth Model Building Strategies and Inputs’ at SEG Annual International Meeting	Sep. 2017
	<b>Co-organizer</b> , SEG Data Analytics Post-Convention Workshop Invited early-career speakers and moderated panel on data science education	Sep. 2017
	<b>Student panel</b> Stanford Aeronautics & Astronautics faculty search	Spring 2017
	<b>Mentor</b> , Stanford Women in Math Mentoring	Oct. 2016-Jun. 2017
	<b>President</b> , Stanford SEG student chapter	2014-2015
<b>Skills</b>	Preferred programming languages: C/C++ and Python HPC tools: MPI, openMP, CUDA, TBB Profiling tools: Tau, HPM, NVCC, Vampir Scientific tools: MATLAB, Mathematica, COMSOL, IDL Environment and development tools: Docker, Singularity, Doxygen, Git, Jupyter Notebooks, Google Cloud Compute Engine, Amazon Web Services	
<b>Industry Experience</b>	<b>High Performance Computing Internship</b> <i>Schlumberger, Menlo Park, CA</i> Mentored by A. Lichnewsky and R.G. Clapp, and supervised by C. Boneti Benchmarked, co-developed, and tested compression scheme for HPC applications	Summer 2016
	<b>Areal Monitoring Internship</b>	Summer 2015

*Shell Projects & Technology, Houston, TX*

Mentored by J. Lopez and supervised by P. Wills

Applied machine learning techniques to analyze data and predict production at  
steam-driven bitumen field in Peace River

Regularly consulted with reservoir engineer to develop useful products

**DOE CSGF Practicum in Weapons & Complex Integration**

Summer 2014

*Lawrence Livermore National Laboratory, Livermore, CA*

Supervised by S. Langer

Improved memory performance of pf3D laser-plasma code by combining physics operators

Evaluated hardware compression needs

**Computational Physics Internship**

2010-2011

*Nanohmics, Inc. Austin, TX*

Project funded through U.S. Department of Defense, PI B. Zollars

Implemented unstructured adaptive mesh methods for finite element code to model  
liquid erosion of coated lenses