Eileen R. Martin

she/her

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Academic Appointments

Assistant Professor, Colorado School of Mines, Golden, CO — Jan. 2022-present
- Department of Geophysics (60% appointment)
- Applied Math and Statistics Department (40% appointment)
- Hydrologic Science and Engineering Program Faculty

Assistant Professor, Virginia Tech, Blacksburg, VA — Aug. 2018 - present
- Department of Mathematics
- Program in Computational Modeling and Data Analytics
- Department of Geosciences, affiliate faculty (Dec. 2019 - present)
- Note: on leave since Jan. 2022

Research Assistant Professor, Colorado School of Mines, Golden, CO Jun.-Dec. 2021
- Unremunerated Appointment in Department of Geophysics

Affiliate, Lawrence Berkeley National Laboratory, Berkeley, CA — 2016-2020
- Earth and Environmental Sciences Area, Geophysics Department

Education

Ph.D. Computational and Mathematical Engineering, **Stanford University**
Dissertation: June 2018
Passive Imaging and Characterization of the Subsurface with Distributed Acoustic Sensing
Readers: Biondo Biondi (advisor), Jonathan Ajo-Franklin, George Papanicolaou

M.S. Geophysics **Stanford University**
Masters research presentation: June 2017
Stanford DAS Array: Ambient Noise and Earthquake Recordings
Committee: Biondo Biondi (advisor) and Greg Beroza

B.S. Dean's Scholars Honors Mathematics, **University of Texas at Austin**
Dean's Honored Graduate, graduated with high honors May 2012
Honors thesis: *Global Coordinate Systems: Continuously Moving Finite-Dimensional Unit Norm Tight Frames on Smooth Manifolds*
Advisor: Daniel Freeman

B.S. Computational Physics **University of Texas at Austin**
Graduated with high honors May 2012

Honors, Awards, Fellowships

Kavli Fellow, National Academy of Sciences	2024
SIAM Activity Group on Geosciences Early Career Prize	2023
NSF CAREER Grant Recipient, NSF Office of Advanced Cyberinfrastructure	2021
Luther and Alice Hamlett Junior Faculty Fellow, Virginia Tech AIS	2019-2022
Gene Golub Dissertation Award, Stanford ICME	2018
Best student poster paper at SEG Annual Meeting, co-author	2017
Schlumberger Innovation Fellowship	2016-2017
DOE Computational Science Graduate Fellowship	2012-2016
Stanford ICME Student Leadership Award	2014

NSF Graduate Research Fellowship Program, award offered	2012
Dean's Honored Graduate, UT-Austin College of Natural Sciences	2012
Barry M. Goldwater Scholarship	2011-2012

Journal Articles

1. X. Ji, M. Xiao, **E.R. Martin**, T. Zhu, 2024, *Statistical Evaluation of Seismic Wave Velocity Models of Permafrost*, recently accepted to Journal of Cold Regions Engineering, Preprint link.
2. A.H. Issah, **E.R. Martin**, 2024, *Impact of Lossy Compression Errors on Passive Seismic Data Analyses,* recently accepted to Seismological Research Letters, Preprint link, code link.
3. K.M. Yost, A. Yerro, **E.R. Martin**, R.A. Green, 2024, *A CPT Database for Multiple Thin-Layer Correction Procedure Development,* recently accepted to Earthquake Spectra. Database and code link
4. Z.J. Spica, J. Ajo-Franklin, G.C. Beroza, B. Biondi, F. Cheng, B. Gaite, B. Luo, **E.R. Martin**, J. Shen, C. Thurber, L. Viens, H. Wang, A. Wuestefeld, H. Xiao, T. Zhu, 2023, *PubDAS: a PUBlic Distributed Acoustic Sensing datasets repository for geosciences*, Seismological Research Letters, 94(2A), pp. 983-998. Preprint link, data link.
5. J.A. Mjehovich, G. Jin, **E.R. Martin**, J. Shragge, 2023, *Rapid surface-deployment of a DAS system for earthquake hazard assessment*, J. Geotech. Geoenviron. Eng., 149(5), 04023027. Data link.
6. Z. Hileman, D. Homa, **E.R. Martin**, G. Pickrell, A. Wang, 2022, *Development of a multimaterial optical fiber for fully distributed magnetic sensing applications*, IEEE Sensors Letters, 6(1), pp. 1-4.
7. K. Yost, A. Yerro, R.A. Green, **E.R. Martin**, J. Cooper, 2022, *MPM Modeling of Cone Penetrometer Testing for Multiple Thin-Layer Effects in Complex Soil Stratigraphy*, J. Geotech. Geoenviron. Eng., 148(2), 04021189.
8. J. Cooper, **E.R. Martin**, K.M. Yost, A. Yerro, R.A. Green, 2022, *Robust identification and characterization of thin soil layers in cone penetration data by piecewise layer optimization*, Computers and Geotechnics, 141, article no. 104404.
   Code link, preprint link.
9. J. Kump, **E.R. Martin**, 2021, *Multichannel Analysis of Surface Waves Accelerated (MASWAccelerated): Software for Efficient Surface Wave Inversion Using MPI and GPUs*, Computers & Geosciences, 156, article no. 104903.
   Code link, preprint link
10. 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, 144, 106677.
11. N.J. Lindsey, **E.R. Martin**, 2021, *Fiber-optic Seismology*, Annual Review of Earth and Planetary Sciences, 49, pp. 309-336.
    Preprint link
12. T. Zhu, J. Shen, **E.R. Martin**, 2021, *Sensing Earth and Environment Dynamics by Telecommunication Fiber-optic Sensors: An Urban Experiment in Pennsylvania USA*, Solid Earth, 12(1), pp. 219-235.
    Data link
13. **E.R. Martin**, 2021, *A Linear Algorithm for Ambient Seismic Noise Double Beamforming Without Explicit Crosscorrelations,* Geophysics, 86(1), pp. IJF-V89.
    Code link , preprint link

14. 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.
15. 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.
16. **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 Unsupervized Learning for Coherent Noise Removal*, IEEE Signal Processing Magazine, **35**(2), pp. 31-40.
Code link
17. 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.
Code link
18. 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.
19. Y. Li, H. Yang, **E.R. Martin**, K.L. Ho, L. Ying, 2015, *Butterfly Factorization*, Multiscale Model. Simul., 13, pp. 714-732.
20. 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.

Book Chapters

1. **E.R. Martin**, N.J. Lindsey, B. Biondi, J.B. Ajo-Franklin, 2022, "Introduction to Interferometry of Fiber Optic Strain Measurements." *Distributed Acoustic Sensing in Geophysics: Methods and Applications*, edited by Y. Li, M. Karrenbach, J.B. Ajo-Franklin, American Geophysical Union Geophysical Monograph Series, John Wiley & Sons, pp. 113-130. Preprint link.
2. B. Biondi, S. Yuan, **E.R. Martin**, F. Huot, R.G. Clapp, 2022 "Using telecommunication fiber infrastructure for earthquake monitoring and near-surface characterization." *Distributed Acoustic Sensing in Geophysics: Methods and Applications*, edited by Y. Li, M. Karrenbach, J.B. Ajo-Franklin, American Geophysical Union Geophysical Monograph Series, John Wiley & Sons, pp. 131-148.

Professional Periodicals

1. **E.R. Martin**, 2023, *Geoscientists Around the Globe: Interview with Yunyue Elita Li,* Geoscientists Around the Globe column, The Leading Edge, 42(11), pp. 782-782, doi.org/10.1190/tle42110782.1
2. T. Ore, **E.R. Martin**, I. Rubio-Cisneros, A. Girard, J. Ma, S. Kanakiya, O. Sanuade, A. Titov, R. de Souza, 2023, *Research Committee Update: Hot Topics in Geophysics: progress, trends, and perspectives*, The Leading Edge, 42(5), pp. 360-363, doi.org/10.1190/tle42050360.1.
3. W. Trainor-Guitton, **E.R. Martin**, V. Rodríguez Tribaldos, N. Taverna, V. Dumont, 2022, *Distributed Sensing and Machine Learning Hone Seismic Listening*, Eos, 103, doi.org/10.1029/2022EO220121.
4. A. Titov, A. Girard, **E.R. Martin**, 2021, *Research Committee Update: Working with – and for – early-career researchers*, The Leading Edge, 40(6), pp. 464-464.
5. 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.

6. **E.R. Martin**, 2020, *Research Committee Update: Shining a Light on Cities with Seismic Data*, The Leading Edge, 39(6), pp. 437-437.
7. **E.R. Martin**, C. Castillo, S. Cole, S. Sawasdee, S. Yuan, R. Clapp, M. Karrenbach, B. Biondi, 2017, *Seismic Monitoring Leveraging Existing Telecomm Infrastructure at the Stanford Distributed Acoustic Sensing Array: Active, Passive and Ambient Noise Analysis*, The Leading Edge, 36(12), pp. 1025-1031.

Publications Under Review

1. K.M. Yost, R.A. Green, A. Yerro, **E.R. Martin**, 2023, *Utilizing CPT Databases to Better Inform Liquefaction Evaluations,* conference paper under review.
2. Z. Dejneka, D. Homa, J. Buontempo, G. Crawford, **E.R. Martin**, L. Theis, A. Wang, G. Pickrell, 2023, *Magnetic Field Sensing via Acoustic Sensing Fiber with Metglas 2605SC Cladding Wires,* journal article under review.
3. A. Tourei, X. Ji, G. Fernando Rocha Dos Santos, R. Czarny, Z. Wang, M. Hallissey, **E.R. Martin**, M. Xiao, T. Zhu, D. Nicolsky, A. Jensen, 2023, *Mapping Permafrost Variability and Degradation Using Seismic Surface Waves, Electrical Resistivity and Temperature Sensing: A Case Study from Arctic Alaska,* journal article under review. Preprint link, data available through Arctic Data Center at doi: 10.18739/A2V40K14Q.
4. D. Chambers, G. Jin, A. Tourei, A.H.S. Issah, A. Lellouch, **E.R. Martin**, D. Zhu, A. Girard, S. Yuan, T. Cullison, T. Snyder, S. Kim, N. Danes, N. Punithan, S. Boltz, M.M. Mendoza, 2024, "DASCore: a Python Library for Distributed Fiber Optic Sensing," journal article under review. Preprint link.

Conference Papers

1. K.M. Yost, A. Yerro, R.A. Green, **E.R. Martin**, *Harnessing Numerical Tools to Study the Limitations of CPTs for Characterizing Complex Soil Stratgraphies for Liquefaction Assessment*, 12th National Conference on Earthquake Engineering, Salt Lake City, Utah, 27 June - 1 July, 2022.
2. K.M. Yost, J. Cooper, R.A. Green, **E.R. Martin**, A. Yerro, *Correcting measured CPT q_c for multiple thin layer effects*, accepted to 5th International Symposium on Cone Penetration Testing, CPT '22, Bologna, Italy, 8 June - 10 June, 2022.
3. **E.R. Martin**, J. Kump, S. Morgan, T. Zhu, *Analyzing Massive, Passive DAS Data in Wavelet-compressed Form*, 2021, SEG — AGU Advances in Distributed Sensing for Geophysics Workshop, online, 8-9 Feb.
4. 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.
5. 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.
6. **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.
7. **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
8. **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

9. 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
10. **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
11. 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
12. F. Huot, Y. Ma, R. Cieplicki, **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
13. 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
14. **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
15. **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
16. **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
17. **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
18. **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
19. 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

Technical Reports

1. A.H. Issah, **E.R. Martin**, *Errors incurred in lossy compression of seismic data,* CWP report, 2023.
2. S. Yuan, T. Snyder, **E.R. Martin**, D. Homa, G. Pickrell, A. Wang, L. Theis, *Towards integrated fiber-optic distributed acoustic and magnetic sensing: theory, simulation and observation,* CWP report, 2023.
3. A.H. Issah, **E.R. Martin**, *Wavelet decomposition for passive data compression and processing,* CWP report, 2022.
4. **E.R. Martin**, *Eighteen months of continuous near-surface monitoring with DAS data collected under Stanford University*, SEP 172, 2018.

5. F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient noise processing applied to fiber optic seismic acquisition*, SEP 172, 2018.
6. **E.R. Martin**, B. Biondi, G. Fabient-Ouellet, R.G. Clapp, *Sensitivity analysis of distributed acoustic sensing arrays*, SEP 170, 2017.
7. **E.R. Martin**, B. Biondi, *Time-lapse changes in ambient noise interferometry and dispersion analysis at the Stanford DAS Array*, SEP 170, 2017.
8. R. Clapp, S. Farris, T. Dahlke, **E.R. Martin**, *C++11 non-linear solver*, SEP 170, 2017.
9. **E.R. Martin**, B. Biondi, S. Cole, M. Karrenbach, *Overview of the Stanford DAS Array-1 (SDASA-1)*, SEP 168, 2017.
10. B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, *Earthquakes analysis using data recorded by the Stanford DAS Array*, SEP 168, 2017.
11. **E.R. Martin**, B. Biondi, *Ambient noise interferometry on two-dimensional DAS arrays*, SEP 168, 2017.
12. F. Huot, Y. Ma, R. Cieplicki,**E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, SEP 168, 2017.
13. E. Williams, **E.R. Martin**, *Detection and removal of coherent anthropogenic noise from passive seismic data*, SEP 165, 2016.
14. **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.
15. **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.
16. **E.R. Martin**, *Compression for effective memory bandwidth use in forward modeling*, SEP 152, 2014.
17. **E.R. Martin**, R. Clapp, H. Le, C. Leader, D. Nichols, *SEPVector: a C++ inversion library*, SEP 152, 2014.
18. M. Denolle, S. de Ridder, J. Chang, **E.R. Martin**, T. Dahlke, H. Arevalo-Lopez, Sr., S. Levin, *Scholte-wave excitation*, SEP 150, 2013.

Software, Data Products and Patents

1. A. Tourei, X. Ji, G. Rocha dos Santos, R. Czarny, S. Rybakov, Z. Wang, M. Hallissey, **E.R. Martin**, M. Xiao, T. Zhu, D. Nicolsky, A. Jensen, C. McComb, 2023, "Seismic and Electrical Resistivity Datasets for Characterizing Permafrost in Alaska," Arctic Data Center, doi:10.18739/A2V40K14Q
2. A.H. Issah, **E.R. Martin**, latest update: 2023, Issah-SRL-compression-2023, https://github.com/aissah/Issah-SRL-compression-2023, doi: 10.5281/zenodo.8284352
3. Z.D. Hileman, D. Homa, G. Pickrell, **E.R. Martin**, "Magnetic Sensing Optical Fiber," Attorney Docket Number: VTIP 22-054 (222204-1125), patent filed June 2023. Note: provisional patent filed in 2022.
4. D.J.A. Chambers, G. Jin, A.H. Issah, D. Zhu, A. Tourei, **E.R. Martin**, S. Kim, N. Danes, S. Boltz, latest update: v0.0.13, 2023, Distributed Acoustic Sensing Data Analysis Ecosystem, https://github.com/DASDAE/dascore , doi: 10.5281/zenodo.8033776
5. Z. Spica, J. Ajo-Franklin, G. Beroza, B. Biondi, F. Cheng, B. Gaite, B. Luo, **E.R. Martin**, J. Shen, C. Thurber, L. Viens, H. Wang, A. Wuestefeld, H. Xiao, T. Zhu, 2022, "PubDAS: a PUBlic Distributed Acoustic Sensing datasets repository for geosciences," Globus, Dataset Collection, https://app.globus.org/file-manager?originid=706e304c-5def-11ec-9b5c-f9dfb1abb183&originpath=%2F

6. K.M. Yost, A. Yerro Colom, **E.R. Martin**, R. Green, 2022, "Data Associated with a CPT Database for Multiple Thin-Layer Correction Procedure Development," University Libraries, Virginia Tech, Dataset and Code, doi: 10.7294/21408450.v1
7. J. Mjehovich, G. Jin, **E.R. Martin**, J. Shragge, 2022, "Cross-correlated ambient data recorded on a distributed acoustic sensing array," Dryad, Dataset, doi:10.5061/dryad.3j9kd51k9
8. J.L. Kump, **E.R. Martin**, W. Ray, latest update: 2022, Cross-correlations in the wavelet domain, https://github.com/jlk9/wavelet_xcorr
9. **E.R. Martin**, N.J. Lindsey, A. Lellouch, latest update: 2022, Introduction to Using DAS Data, https://github.com/DAS-RCN/IntroToDASData
10. S. Paulus, B. Pearl, **E.R. Martin**, latest update: 2021, DASDataProducts, release: v1.0.0, https://github.com/eileenrmartin/DASDataProducts/tree/v1.0.0-alpha , doi: 10.5281/zenodo.5764266
11. J.C. Cooper, **E.R. Martin**, latest update: 2021, Soil Layer Optimization for Improving Cone Penetrometer Data, https://github.com/jonc7/Soil-Layer-Optimization
12. T. Zhu, J. Shen, **E.R. Martin**, 2021, "Sensing Earth and environment dynamics by telecommunication fiber-optic sensors: an urban experiment in Pennsylvania, USA," Penn State Data Commons, Dataset, https://www.datacommons.psu.edu/commonswizard/MetadataDisplay.aspx?Dataset=6290
13. J.L. Kump, E.R. Martin, latest update: 2020, Multichannel Analysis of Surface Waves Accelerated, https://github.com/jlk9/MASWA
14. E.R. Martin, latest update: 2020, A linear algorithm for double beamforming of ambient noise interferometry, https://github.com/eileenrmartin/doubleBeamforming
15. E.R. Martin, F. Huot, Y. Ma, R. Cieplicki, latest update: 2017, Detection and removal of vehicles from ambient noise interferometry, https://github.com/eileenrmartin/IEEEsigproc_ambientDAS
16. E.R. Martin, latest update: 2015, A linear algorithm for surface wave dispersion image calculation from ambient noise interferometry, https://github.com/eileenrmartin/fastdispersionimages

External Funding

Subcontract with Sentek Instrument (Prime Sponsor, DOE SBIR)
Amount to Colorado School of Mines: $41,232
Distributed fiber optic electromagnetic sensing for subsurface monitoring of carbon storage sites
PI: A. Wang, Co-PIs: G. Pickrell (Virginia Tech, Materials Science & Engineering), D. Homa (Virginia Tech, Materials Science & Engineering), E.R. Martin (lead at Mines), S. Yuan (Geophysics, Mines)
Period of Performance: 7/10/23-4/9/24

NSF 2243963, Earth Sciences Instrumentation and Facilities
Amount to Colorado School of Mines: $37,512
Collaborative Research: CFS (Track III): Centers for Transformative Environmental Monitoring Programs (CTEMPs)
PI at Lead Institution: Adrian Harpold (Univ. of Nevada Reno, Natural Resources & Environmental Science), Co-PIs: E.R. Martin (lead PI at Mines), M. Hausner (Desert Research Institute, Hydrology), J. Selker (Oregon State, Biological and Ecological Engineering), C. Udell (Oregon State, Biological and Ecological Engineering), M. Wengrove (Oregon State, Civil and Construction Engineering), S. Tyler (Univ. of Nevada Reno, Geological Sciences & Engineering), C. Kratt (Univ. of Nevada Reno, Geological Sciences & Engineering)
Period of Performance: 7/15/23-6/30/27

NSF 2148614, Geoinformatics Program
Amount to Colorado School of Mines: $483,833
Catalytic: Distributed Acoustic Sensing Data Analysis Ecosystem (DASDAE)
PI: E.R. Martin, Co-PI: G. Jin (Mines, Geophysics)
Period of Performance: 7/1/22-6/30/25

Subcontract number 1841, Luna Innovations (Prime Sponsor, DOE STTR)
Amount to Colorado School of Mines: $125,000
Cloud-based Management and Analysis of Large, Complex Distributed Acoustic Sensing Data
PI at Luna: D. Rountree, Co-PIs: E.R. Martin (lead at Mines), G. Jin (Mines, Geophysics)
Period of Performance: 2/14/22 - 1/20/23

Subaward 62681767-227888, Stanford University (Prime Sponsor, AFRL)
Amount to Colorado School of Mines: $196,560
Towards Enhanced Seismic Monitoring with Distributed Acoustic Sensing (DAS)
P.I.: E.R. Martin
Period of Performance: 8/1/21 - 7/31/26

NSF 2046387, Office of Advanced Cyberinfrastructure
Amount: $398,024 awarded to date ($509,722 total intended)
CAREER: Scalable Computational Seismology for All
PI: E.R. Martin
Period of Performance: 7/1/21 - 6/30/26

Subcontract 3437-AFR-2S+, Luna Innovations, Inc.
Amount to Virginia Tech: $187,150
Swift and QUiet Airfield Assessment Device (SQUAAD), Phase II
PI: R. Green (Virginia Tech, Civil & Environmental Engineering), Co-PI: E.R. Martin
Period of Performance: 3/1/21-3/1/23

NSF 2034366, Signals in the Soil Program
Amount to Virginia Tech: $216,167
SitS: Collaborative Research: Understand and Forecast Long-term Variations of In-situ Geophysical and Geomechanical Characteristics of Degrading Permafrost in the Arctic
PI: M. Xiao (Penn State, Civil & Environmental Engineering), Co-PIs: E.R. Martin (lead PI at Virginia Tech), 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: 8/1/19-7/31/22

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: $6,000
Spring 2019: Data compression for next-generation seismic sensor networks
Spring 2020: Footstep removal to protect resident privacy in urban seismology data
Summer 2021: Compression and Data Product Streams in Permafrost Thaw Monitoring
PI: E.R. Martin
Period of performance: 1/14/19-6/30/25

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

Invited Talks

AGU Fall Meeting session on Leveraging Distributed Acoustic Sensing in Modern Monitoring Applications (invited) — San Francisco, CA, Dec. 2023
DEEPS Seminar — Brown University, Providence, RI, Oct. 2023
BGC Engineering Seminar — BGC Engineering, hybrid, Golden, CO, Aug. 2023
GNEM Seminar — Sandia National Laboratories, remote, Sandia, NM, Jul. 2023

SIAM Conference on Mathematical & Computational Issues in Geosciences (prize lecture) Bergen, Norway, Jun. 2023
Conference on Data Analysis (invited) Santa Fe, NM, Apr. 2023
Computational Math Seminar CU Boulder, Boulder, CO, Jan. 2023
Geologic Hazards Science Center Seminar US Geological Survey, remote, Oct. 2022
Geo Seminar Series Colorado State University, Ft. Collins, CO, Sep. 2022
EAS Seminar University of Houston, Houston, TX, Apr. 2022
SeismoTea Seminar University of Utah, Apr. 2022
AMS Colloquium Colorado School of Mines, Feb. 2022
Numerical Analysis and Scientific Computing Seminar, NYU Courant, remote, Nov. 2021
DAS Workshop - Infrastructure & Imaging - NHERI@UTexas Baton Rouge, LA and virtual, Oct. 2021
Southern California Earthquake Center Annual Meeting (plenary) remote, Sep. 2021
GAGE/SAGE Community Science Workshop (plenary) remote, Aug. 2021
Caltech Seismological Lab Seminar Caltech, remote, Apr. 2021
IRIS Board of Directors Meeting remote, Feb. 2021
Heiland Lecture Colorado School of Mines, remote, Feb. 2021
AGU Fall Meeting session on Observation of Rotation, Strain and Translation in Seismology - Applications, Instrumentation and Theory (invited), remote, Dec. 2020
Scientific Computing and Numerics Seminar Cornell University, remote, Nov. 2020
Applied Geophysics Research Seminar ExxonMobil, remote, Aug. 2020
Mathematics and Computer Science Division Seminar Argonne National Lab, remote, Jul. 2020
Earthquake Science Center Seminar US Geological Survey, remote, Jul. 2020
Institute of Geophysics Seminar University of Hamburg, remote, Jun. 2020
EGU General Assembly session on Ambient noise seismology: Topics, targets, tools & techniques (invited) remote, May 2020
Women in Data Science at Stanford Earth (invited) Stanford University, Nov. 2019
International Conference on Engineering Geophysics (invited) Al Ain, UAE, Oct. 2019
BiSEPPS Seminar Harvard University, Cambridge, MA, May 2019
Solid Earth Brownbag Seminar Princeton University, Princeton, NJ, May 2019
IRIS Workshop: Foundations, Frontiers and Future Facilities for Seismology (plenary) Albuquerque, NM, Jun. 2018
Heiland Lecture Colorado School of Mines, Golden, CO, Jan. 2018
Seismology Seminar Lawrence Livermore National Lab, Livermore, CA, 2017

Tutorial Presentation Materials

Distributed Acoustic Sensing, Remote Online Sessions for Emerging Seismologists, video of lecture on YouTube remote global audience, Jul. 2021
Why we love arrays for data science, Women in Data Science Worldwide Workshops, video of lecture on YouTube remote global audience, Mar. 2021
An Introduction to Seismology with Distributed Acoustic Sensing, AGU Fall Meeting, video of same material recorded for YouTube Washington, DC, Dec. 2018

Research Advising

Postdoctoral Researchers and Research Associates Supervised

Dr. Shihao Yuan, Dept. of Geophysics CSM, Dec. 2022-present
Dr. Frantisek Stanek, Dept. of Geophysics CSM, Feb.-Nov. 2022

Graduate Student Theses Supervised

Georgia Brooks, AMS M.S. CSM, Jan. 2024 - present
Yida Song, Geophysics Ph.D. CSM, Aug. 2023 - present
Nikhil Punithan, Geophysics M.S. CSM, Aug. 2023 - present
co-advised with J. Shragge

Tomas Snyder, HSE M.S. CSM, Jan. 2023 - present
Ahmad Tourei, HSE Ph.D. VT, Sep. 2021 - Aug. 2022; CSM, Aug. 2022 - present
co-advised with J. Hole
Hafiz Issah, AMS Ph.D. VT, Aug.-Dec. 2021; CSM, Jan. 2022 - present
Sarah Morgan, Mathematics M.S. (thesis link) VT, Aug. 2020 - May 2022
Julius Grimm, Applied Geophysics M.S. (thesis link) IDEA League, graduated Aug. 2021
co-advised with P. Paitz, P. Edme, A. Fichtner, F. Walter
Joseph Kump, Mathematics M.S. (thesis link) VT, graduated May 2021

Undergraduate and Non-thesis Masters Student Researchers Supervised

Cash Cherry, Geophysics major CSM, Fall 2023 - present
Pablo Chang Huang, Geophysics major CSM, Summer 2023 - present
Mia Jungman, Geophysics major CSM, Spring 2023 - present
Seunghoo Kim, Geophysics major CSM, Fall 2022 - Spring 2023
Brandon Pearl, Computer Science M.Eng. researcher VT, Fall 2021-Spring 2022
Samantha Paulus, CMDA and Nanoscience major VT, Spring 2021-Spring 2022
Tony Artis, CMDA major VT, Spring 2020-Spring 2022
Firaol Woldemariam, CMDA major VT, Spring 2021-Fall 2021
Jon Cooper, Mathematics M.S. researcher VT, Spring 2021-Fall 2021
Anu Trivedi, Mathematics major VT, Fall 2019-Spring 2021
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

Graduate Thesis Committee Member

Rachel Willis, Ph.D. with M. Siegfried, Geophysics, CSM, degree in progress
Ana Garcia-Ceballos, Ph.D. with G. Jin, Geophysics, CSM, degree in progress
Donglin Zhu, Ph.D. with G. Jin, Geophysics, CSM, degree in progress
Skye Hart, M.S. with Y. Li, Geophysics, CSM, degree in progress
Sweta Rai, Ph.D. with D. Nychka, S. Bandyopadhyay, AMS, CSM, degree in progress
Joseph Cherayil, M.S. with A. Tura, J. Simmons, Geophysics, CSM, degree in progress
Reynaldo Vite Sanchez, Ph.D. with E. Bozdag, Geophysics, CSM, degree in progress
Alexander Ankamah, Ph.D. with J. Hole, Geosciences, VT, degree in progress
Maggie Bailey, Ph.D. with D. Nychka, S. Bandyopadhyay, AMS, CSM, degree in progress
Hannah Verboncoeur, Ph.D. with M. Siegfried, Geophysics, CSM, degree in progress
Peiyao Li, Ph.D. with G. Jin, Geophysics CSM, degree in progress
Derrick Chambers, Ph.D. with J. Shragge, Geophysics CSM, degree in progress
Junzhu Shen, Ph.D. with T. Zhu, Geosciences Penn State, degree in progress
Nhat Nguyen, Ph.D. with L. Massa, AOE VT, degree awarded Aug. 2023
Kaleigh Yost, Ph.D. with R. Green, CEE VT, degree awarded Dec. 2022
Amin Baghbadorani, Ph.D. with J. Hole, Geosciences VT, degree awarded Aug. 2022
Joseph Mjehovich, M.S. with G. Jin, Geophysics CSM, degree awarded May 2022
Zachary Hileman, Ph.D. with G. Pickrell, MSE VT, degree awarded May 2022
ThaoVy Nguyen, M.S. with R. Hewett, Mathematics VT, degree awarded May 2021
Taewon Cho, Ph.D. with J. Chung, Mathematics VT, degree awarded May 2021

Teaching

Instructor, Mathematical Geophysics (CSM, GPGN 229) Spring 2024
Instructor, Applied Mathematics I (CSM, MATH 514) Fall 2023
Instructor, Graduate Reading Seminar (CSM, GPGN 583) Fall 2023
Instructor, Mathematical Geophysics (CSM, GPGN 229) Spring 2023
Instructor, Parallel Scientific Computing (CSM, MATH 440/540) Spring 2023
Instructor, Mathematical Geophysics (CSM, GPGN 229) Spring 2022
Instructor, BEPUR: Broadening Engagement and Participation in Undergraduate

Research (VT, MATH 2984) Fall 2021
Project Mentor, Capstone Project (VT, CMDA 4864) Fall 2021
Senior team project on optimal detection of targets in GPR data
Instructor, BEPUR: Broadening Engagement and Participation in Undergraduate Research (VT, MATH 2984) Spring 2021
Instructor, CS Foundations for CMDA (VT, CMDA 3634) 2 sections, Fall 2020
Instructor, CS Foundations for CMDA (VT, CMDA 3634) Spring 2020
Instructor, Extreme-Scale Inverse Problems (VT, MATH 5984) Fall 2019
Instructor, Integrated Quantitative Science I (VT, CMDA 2005) Fall 2019
Project Mentor, Capstone Project (VT, CMDA 4864) Fall 2019
Senior team project on removing footstep signals from urban seismic data
Instructor, CS Foundations for CMDA (VT, CMDA 3634) Spring 2019
Instructor, Integrated Quantitative Science I (VT, CMDA 2005) Fall 2018
ICME Teaching Fellow 2016-2018, status to recognize student teaching experience
Course assistant, Intro. to Scientific Computing (Stanford, CME 108) Winter 2016
Project Mentor, Projects in App. & Comp. Math (Stanford, CME 181) Spring 2015
Undergrad project on statistical analysis of bicycle sharing network data
Instructor, Introduction to Scientific Python (Stanford, CME 193) Winter 2015
Instructor, Short course on Python at SIAM Conference on Geosciences, June 2015
Project Mentor, Projects in App. & Comp. Math (Stanford, CME 181) Winter 2014
Undergrad project on tsunami modeling using Hawaiian bathymetry
STEM Tutor, 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

Professional Service, Outreach

Member, Mines AMS Undergrad. Recruiting & Outreach Committee, Sep. 2023-present
Member, Earthscope IIAC Committee Jul. 2023-present
Member, SEG JEDI Committee Apr. 2021-present
Vice-chair, Sep. 2022-present
Co-coordinator, Mines GP Social Media Jan. 2023-present
Member, Mines GP Reimagine Committee Jan. 2022-present
Undergraduate advising, Undergraduate Geophysics Majors Mar. 2022-present
Member, Mines AMS Graduate Committee Aug. 2022-present
Led review of CAM graduate curriculum (Oct.-Dec. 2022)
Member, Mines AMS Graduate Computing Resources Committee Dec 2022-present
Member, USGS Powell Center on distributed acoustic sensing Oct. 2022-present
Advisor, Undergraduate Geophysics Majors Mar. 2022-present
Panelist, APS Conference for Undergraduate Women in Physics Jan. 2024
Member, SEG Research Committee Oct. 2018-Aug. 2023
Co-organized multiple post-convention research workshops
Co-founded Early Career Research Subcommittee
Steering Committee Member, NSF-funded DAS Research Coordination Network
Co-leader of Machine Learning Working Group Feb. 2020-Jul. 2023
Co-leader of RCN-affiliated virtual workshops
Co-organizer, DAS RCN hands-on tutorial and DASDAE tutorial May-June 2023
Member, Mines AMS Computing Resources Working Committee Dec. 2022-May 2023
Co-organizer, Women Earth Data Scientists Day at Mines Apr. 2023
Co-organizer, Distributed Acoustic Sensing Tutorial at SSA Annual Meeting Apr. 2023
Co-convener, AGU Fall Meeting session "Near-Surface Geophysics in a Changing Climate" Dec. 2022
Co-organizer, Mines GP100 alumni tutorial on distributed acoustic sensing Nov. 2022
Associate editor, *Computers & Geosciences* Nov. 2018-Oct. 2022
Co-organizer, IMAGE Post-convention workshop "High-Performance Computing -

What Does the Future Look Like?" Sep. 2022

Member, EarthScope Board Nominating Committe May-July 2022

Co-organizer DAS tutorial workshop at Community Surface Dynamics Modelling System Annual Meeting May 2022

Co-organizer, Speakers and Undergraduate Research Engagement Feb. 2019-Dec. 2021
Program to guide women undergrad math students through first research projects, and bring diverse women mathematicians for research talks and career path discussions

Advisor, Undergraduate Math Majors, Traditional Option Aug. 2020-Dec. 2021

Member, CMDA Computing Curriculum Committee Aug. 2018-Dec. 2021

Co-convener, AGU Fall Meeting session "Observing Wave Field Gradients in Seismology-Applications, Instrumentation and Theory" Dec. 2021

Guest Editor, IEEE CiSE: DOE Computational Science Graduate Fellowship Research Showcase published Nov. 2021

Co-organizer, IMAGE Post-convention workshop "Distributed Fiber-Optic Sensing in Applied Geophysics" Oct. 2021

Co-organizer, GAGE/SAGE Short course "Distributed Acoustic Sensing: Scientific Frontiers and Community Needs" Aug. 2021

Member, Virginia Tech Math Dept. Colloquium Committee Aug. 2020-Jul. 2021

Instructor, Remote Online Sessions for Emerging Seismologists (ROSES) lesson on Distributed Acoustic Sensing July 2021

Panelist, AGU EPSP Connects: Surface processes applications of environmental seismology and distributed acoustic sensing (DAS) Q&A May 2021

Member, SEG Equity in Process Task Force Aug. 2020-Apr. 2021

Faculty sponsor/organizer, 3rd Women in Data Science Blacksburg at Virginia Tech conference April 2021

Panelist, Virginia Tech Assoc. for Women in Computing research panel Mar. 2021

Member, DOE CSGF Screening Committee 2020, 2021

Session Co-Chair, AGU Fall Meeting session on Data Science and Machine Learning for Natural Hazard Sciences Dec. 2020

Panelist, discussion on women in geosciences for Diversity and Inclusion in Geoscience course at University of Wyoming Oct. 2020

Co-Organizer, SEG Annual International Meeting Post-convention Workshop on DAS: Advances in Fiber Optic Sensing Over the Last Decade Oct. 2020

Speaker, UT-Austin Dean's Scholars Honors Program Friday Lunch Talk Sep. 2020

Co-Lead, DAS Virtual Workshop and Tutorial Aug. 2020
Three-afternoon virtual workshop and tutorial 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.

Member, Virginia Tech Math Dept. Technology Committee Aug. 2018 - Aug. 2020

Judge, Virginia Tech Socially Determined COVID-19 Social Data Project Apr. 2020

Faculty sponsor/organizer, 2nd Women in Data Science Apr. 2020
Blacksburg at Virginia Tech conference (converted to online event with 3 speakers)

Panelist, Virginia Tech Assoc. for Women in Mathematics internship panel Feb. 2020

Session co-chair, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, session on Fiber-based Distributed Acoustic Sensing Dec. 2019

Co-Organizer, SEG Annual International Meeting Post-convention Workshop on Real-time Processing for Large-Scale Streaming Seismic Data, agenda Sep. 2019

Chair, Session on 'Distributed Acoustic Sensing: VSP, Modeling and Imaging Approaches' at SEG Annual International Meeting Sep. 2019

Mentor, DOE CSGF High Performance Computing Workshop Jul. 2019

Panelist, Early Career Panel, DOE CSGF Annual Program Review Jul. 2019

Mentor, Student mentoring program run by Virginia Tech chapter of American Women in Mathematics Sep. 2018 - May 2019

Co-Organizer, Session on 'Photonic and Nonintertial Seismology' at Seismological Society of America Annual Meeting Apr. 2019
Speaker, Virginia Tech Undergraduate Math Club Apr. 2019
Volunteer, ASA DataFest at Virginia Tech Apr. 2019
Faculty sponsor/organizer, 1st Women in Data Science conference at VT Feb. 2019
Organizer, Session on 'Computational Advances for Large-Scale Geophysical Data' at SIAM CS&E Feb. 2019
Judge, CMDA Fall Data Competition at Virginia Tech Nov. 2018
Panelist, UT-Austin Association for Women in Mathematics career panel Nov. 2018
Speaker, UT-Austin Undergraduate Math Club Nov. 2018
Special section associate editor, *Interpretation* 2018
Special issue on 'Distributed Acoustic Sensing and its Oil Field Potential'
Mentor, ICME first-year mentoring program Sep. 2017-Jun. 2018
Co-organizer, Stanford Computational Geosciences Seminar Jan.-Mar. 2018
Brought in 9 speakers from outside Stanford, organized 1 hr. course EARTH 310
Co-chair, Session on 'Earth Model Building Strategies and Inputs' at SEG Annual International Meeting Sep. 2017
Co-organizer, SEG Data Analytics Post-Convention Workshop Sep. 2017
Invited early-career speakers and moderated panel on data science education
Student panel Stanford Aeronautics & Astronautics faculty search Spring 2017
Mentor, Stanford Women in Math Mentoring Oct. 2016-Jun. 2017
President, Stanford SEG student chapter 2014-2015

Skills

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

Industry Experience

High Performance Computing Internship Summer 2016
Schlumberger, Menlo Park, CA
Mentored by A. Lichnewsky and R.G. Clapp, and supervised by C. Boneti
Benchmarked, co-developed, and tested compression scheme for HPC applications

Areal Monitoring Internship 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