Bei Wang

Assistant Professor

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Education

2010   Ph.D. in Computer Science, Duke University
Thesis: <u>Separating Features from Noise with Persistence and Statistics</u>
Advisor: Herbert Edelsbrunner
2010   Certificate in Computational Biology and Bioinformatics, Duke University
2003   B.S. in Computer Science and Mathematics, Minor in Psychology
Summa Cum Laude, University of Bridgeport

Professional Experience

2016 – Present   Assistant Professor, School of Computing, Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT
2011 – 2016   Research Computer Scientist, Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT
2010 – 2011   Postdoctoral Fellow, Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT
2009 – 2010   Visiting Researcher, Institute of Science and Technology, Austria

Awards

- Best Paper Award at International Workshop on Connectomics in NeuroImaging (CNI) at MICCAI, 2018.
- Best Paper Award at IEEE Pacific Visualization (PacificVis), 2016.
- Best Paper Award at IEEE Pacific Visualization (PacificVis), 2014.
- First runner-up for the Best Student Paper Award at International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA), 2013.
- Best Teaching Assistant, Department of Computer Science, Duke University, 2007.
- The Honor Society of Phi Kappa Phi Award of Excellence, 2003-2004.
- President's Award, Student Leadership Award, University of Bridgeport, 2003.
- Dean's Award, School of Engineering, University of Bridgeport, 2003.
- Academic Achievement in Computer Science (B.S.), School of Engineering, University of Bridgeport, 2003.

- Honorable Mention, Student Paper Contest, New England Section of the American Society for Engineering Education, 2003.
- Charles Reed Award for superior scholarly achievements, School of Engineering, University of Bridgeport, 2002.
- Student Leadership Award: Outstanding Involvement by a Junior, University of Bridgeport, 2002.
- Sigma Xi Grant-in-Aid of Research recipient, 2002
- Upsilon Pi Epsilon Microsoft Scholarship Award, 2002
- Certificate of Achievement, ACM Programming Contest Northeast Regional Preliminary Western New England College Site, 2001.

Publications[1]

Journal Publications

1. Sourabh Palande, Vipin Jose, Brandon Zielinski, Jeffrey Anderson, P. Thomas Fletcher, and Bei Wang. Revisiting Abnormalities in Brain Network Architecture Underlying Autism Using Topology-Inspired Statistical Inference. *Brain Connectivity, accepted*, 2018.

2. Shusen Liu, Peer-Timo Bremer, Jayaraman J. Thiagarajan, Vivek Srikumar, Bei Wang, Yarden Livnat, and Valerio Pascucci. Visual Exploration of Semantic Relationships in Neural Word Embeddings. *IEEE Transactions on Visualization and Computer Graphics (TVCG, Proceedings of InfoVis)*, 24(1):553–562, 2018.

3. Shusen Liu, Dan Maljovec, Bei Wang, Peer-Timo Bremer, and Valerio Pascucci. Visualizing high-dimensional data: Advances in the past decade. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 23(3):1249–1268, 2017.

4. Primoz Skraba, Paul Rosen, Bei Wang, Guoning Chen, Harsh Bhatia, and Valerio Pascucci. Critical point cancellation in 3D vector fields: Robustness and discussion. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 22(6):1683–1693, 2016.

5. Shusen Liu, Peer-Timo Bremer, Jayaraman J. Thiagarajan, Bei Wang, Brian Summa, and Valerio Pascucci. Grassmannian Atlas: A General Framework for Exploring Linear Projections of High-Dimensional Data. *Computer Graphics Forum (CGF, Proceedings of EuroVis)*, 35(3):1–10, 2016.

6. Attila Gyulassy, Aaron Knoll, Kah Chun Lau, Bei Wang, Peer-Timo Bremer, Michael E. Papka, Larry A. Curtiss, and Valerio Pascucci. Interstitial and Interlayer Ion Diffusion Geometry Extraction in Graphitic Nanosphere Battery Materials. *IEEE Transactions on Visualization and Computer Graphics*, 22(1):916–925, 2016.

7. Dan Maljovec, Shusen Liu, Bei Wang, Valerio Pascucci, Peer-Timo Bremer, Diego Mandelli, and Curtis Smith. Analyzing Simulation-Based PRA Data Through Traditional and Topological Clustering: A BWR Station Blackout Case Study. *Reliability Engineering & System Safety (RESS)*, 145:262–276, 2016.

8. Primoz Skraba, Bei Wang, Guoning Chen, and Paul Rosen. Robustness-Based Simplification of 2D Steady and Unsteady Vector Fields. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 21(8):930 – 944, 2015.

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[1]Students underlined.

9. Harsh Bhatia, Bei Wang, Gregory Norgard, Valerio Pascucci, and Peer-Timo Bremer. Local, Smooth, and Consistent Jacobi Set Simplification. *Computational Geometry: Theory and Applications (CGTA)*, 48(4):311–332, 2015.

10. Peer-Timo Bremer, Dan Maljovec, Avishek Saha, Bei Wang, Jim Gaffney, Brian K. Spears, and Valerio Pascucci. ND2AV: N-Dimensional Data Analysis and Visualization – Analysis for the National Ignition Campaign. *Computing and Visualization in Science*, 17(1):1–18, 2015.

11. Shusen Liu, Bei Wang, Jayaraman J. Thiagarajan, Peer-Timo Bremer, and Valerio Pascucci. Visual Exploration of High-Dimensional Data through Subspace Analysis and Dynamic Projections. *Computer Graphics Forum (CGF, Proceedings of EuroVis)*, 34(3):271–280, 2015.

12. Shusen Liu, Bei Wang, Peer-Timo Bremer, and Valerio Pascucci. Distortion-Guided Structure-Driven Interactive Exploration of High-Dimensional Data. *Computer Graphics Forum (CGF, Proceedings of EuroVis)*, 33(3):101–110, 2014.

13. Bei Wang, Paul Rosen, Primoz Skraba, Harsh Bhatia, and Valerio Pascucci. Visualizing Robustness of Critical Points for 2D Time-Varying Vector Fields. *Computer Graphics Forum (CGF, Proceedings of EuroVis)*, 32(3pt2):221–230, 2013.

14. Dan Maljovec, Bei Wang, Ana Kupresanin, Gardard Johannesson, Valerio Pascucci, and Peer-Timo Bremer. Adaptive sampling with topological scores. *International Journal for Uncertainty Quantification (IJUQ)*, 3(2):119–141, 2013.

15. Bei Wang, Brian Summa, Valerio Pascucci, and Mikael Vejdemo-Johansson. Branching and Circular Features in High Dimensional Data. *IEEE Transactions on Visualization and Computer Graphics (TVCG, Proceedings of SciVis)*, 17(12):1902–1911, 2011.

16. Bei Wang, Herbert Edelsbrunner, and Dmitriy Morozov. Computing Elevation Maxima by Searching the Gauss Sphere. *Journal of Experimental Algorithmics (JEA)*, 16:1–13, 2011.

17. Mats Enster, Örjan Åkerborg, Daniel Lundin, Bei Wang, Terrence S Furey, Marie Öhman, and Jens Lagergren. A Computational Screen for Site Selective A-to-I Editing Detects Novel Sites in Neuron Specific Hu Proteins. *BMC Bioinformatics*, 11(6), 2010.

18. Bei Wang, Dimitris Papamichail, Steffen Mueller, and Steven Skiena. Two Proteins for the Price of One: The Design of Maximally Compressed Coding Sequences. *Natural Computing*, 6(4):359–370, 2007.

19. Tarek M. Sobh, Bei Wang, and Kurt W. Coble. Experimental Robot Musicians. *Journal of Intelligent and Robotic Systems (JIRS)*, 38(2):197–212, 2003.

20. Tarek M. Sobh, Bei Wang, and Sarosh Patel. A Mobile Wireless and Web-based Analysis Tool for Robot Design and Dynamic Control Simulation from Task Points Description. *Journal of Internet Technology*, 4(3):153–161, 2003.

21. Tarek M. Sobh, Rajeev Sanyal, and Bei Wang. Web Based Remote Surveillance of Mobile Robot. *Journal of Internet Technology*, 4(3):179–184, 2003.

Conference Publications

1. Kevin Knudson and Bei Wang. Discrete Stratified Morse Theory: A User's Guide. *International Symposium on Computational Geometry (SOCG)*, 2018

2. Adam Brown and Bei Wang. Sheaf-Theoretic Stratification Learning. *International Symposium on Computational Geometry (SOCG)*, 2018

3. Michal Adamaszek, Henry Adams, Ellen Gasparovic, Maria Gommel, Emilie Purvine, Radmila Sazdanovic, Bei Wang, Yusu Wang, and Lori Ziegelmeier. Vietoris-Rips and Čech Complexes of Metric Gluings. *International Symposium on Computational Geometry (SOCG)*, 2018

4. Mustafa Hajij, Bei Wang, Carlos Scheidegger, and Paul Rosen. Visual detection of structural changes in time-varying graphs using persistent homology. *IEEE Pacific Visualization Symposium (PacificVis)*, 2018

5. Lin Yan, Yaodong Zhao, Paul Rosen, Carlos Scheidegger, and Bei Wang. Homology-preserving dimensionality reduction via manifold landmarking and tearing. *Symposium on Visualization in Data Science (VDS) at IEEE VIS*, 2018

6. Tim Sodergren, Jessica Hair, Jeff M. Phillips, and Bei Wang. Visualizing sensor network coverage with location uncertainty. *Symposium on Visualization in Data Science (VDS) at IEEE VIS*, 2017

7. Wathsala Widanagamaachchi, Alexander Jacques, Bei Wang, Erik Crosman, Peer-Timo Bremer, Valerio Pascucci, and John Horel. Exploring the Evolution of Pressure-Perturbations to Understand Atmospheric Phenomena. *IEEE Pacific Visualization Symposium (PacificVis)*, 2017

8. Hoa Nguyen, Paul Rosen, and Bei Wang. Visual Exploration of Multiway Dependencies in Multivariate Data. *ACM SIGGRAPH ASIA Symposium on Visualization*, 2016

9. Elizabeth Munch and Bei Wang. Convergence between Categorical Representations of Reeb Space and Mapper. *International Symposium on Computational Geometry (SOCG)*, 2016

10. Eleanor Wong, Sourabh Palande, Bei Wang, Brandon Zielinski, Jeffrey Anderson, and P. Thomas Fletcher. Kernel partial least squares regression for relating functional brain network topology to clinical measures of behavior. *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2015

11. Brittany T. Fasy and Bei Wang. Exploring persistent local homology in topological data analysis. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 6430–6434, 2015

12. Primoz Skraba, Paul Rosen, Bei Wang, Guoning Chen, Harsh Bhatia, and Valerio Pascucci. Critical point cancellation in 3D vector fields: Robustness and discussion. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 22(6):1683–1693, 2016

13. Dan Maljovec, Bei Wang, Paul Rosen, Andrea Alfonsi, Giovanni Pastore, Cristian Rabiti, and Valerio Pascucci. Rethinking sensitivity analysis of nuclear simulations with topology. *IEEE Pacific Visualization Symposium (PacificVis)*, pages 64–71, 2016

14. Jeff M. Phillips, Bei Wang, and Yan Zheng. Geometric inference on kernel density estimates. *International Symposium on Computational Geometry (SOCG)*, pages 857–871, 2015

15. Primoz Skraba and Bei Wang. Approximating local homology from samples. *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 174–192, 2014

16. Primoz Skraba, Bei Wang, Guoning Chen, and Paul Rosen. 2D vector field simplification based on robustness. *IEEE Pacific Visualization Symposium (PacificVis)*, pages 49–56, 2014

17. Shusen Liu, Bei Wang, Jayaraman J. Thiagarajan, Peer-Timo Bremer, and Valerio Pascucci. Multivariate volume visualization through dynamic projections. *IEEE Symposium on Large Data Analysis and Visualization (LDAV)*, pages 35–42, 2014

18. Dan Maljovec, Shusen Liu, Bei Wang, Valerio Pascucci, Peer-Timo Bremer, Diego Mandelli, and Curtis Smith. Analyzing Simulation-Based PRA Data Through Traditional and Topological Clustering: A BWR Station Blackout Case Study. *Reliability Engineering & System Safety (RESS)*, 145:262–276, 2016

19. Diego Mandelli, Curtis Smith, Tom Riley, Joseph Nielsen, John Schroeder, Cristian Rabiti, Andrea Alfonsi, Joshua Cogliati, Robert Kinoshita, Valerio Pascucci, Bei Wang, and Dan Maljovec. Overview of new tools to perform safety analysis: Bwr station black out test case. In *Probabilistic Safety Assessment & Management conference (PSAM)*, 2014

20. Dan Maljovec, Bei Wang, Valerio Pascucci, Peer-Timo Bremer, Michael Pernice, Diego Mandelli, and Robert Nourgaliev. Exploration of high-dimensional scalar function for nuclear reactor safety analysis and visualization. *International Conference on Mathematics and Computational Methods Applied to Nuclear Science & Engineering (M&C)*, pages 712–723, 2013

21. Dan Maljovec, Bei Wang, Ana Kupresanin, Gardard Johannesson, Valerio Pascucci, and Peer-Timo Bremer. Adaptive sampling with topological scores. *International Journal for Uncertainty Quantification (IJUQ)*, 3(2):119–141, 2013

22. Maljovec, Dan, Bei Wang, Diego Mandelli, Peer-Timo Bremer, and Valerio Pascucci. Analyze dynamic probabilistic risk assessment data through clustering. In *International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA)*, 2013

23. Paul Bendich, Bei Wang, and Sayan Mukherjee. Local homology transfer and stratification learning. *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 1355–1370, 2012

24. A.N.M. Imroz Choudhury, Bei Wang, Paul Rosen, and Valerio Pascucci. Topological analysis and visualization of cyclical behavior in memory reference traces. *Proceedings IEEE Pacific Visualization Symposium (PacificVis)*, pages 9–16, 2012

25. Bei Wang, Jeff M. Phillips, Robert Schrieber, Dennis Wilkinson, Nina Mishra, and Robert Tarjan. Spatial scan statistics for graph clustering. *SIAM International Conference on Data Mining (SDM)*, 2008

26. Sudheer Sahu, Bei Wang, and John H. Reif. A framework for modeling dna based molecular systems. *Lecture Notes in Computer Science (LNCS, Proceedings of DAN Computing)*, 4287:250–265, 2006

27. Tarek M. Sobh, Bei Wang, and Sarosh H. Patel. Web enabled robot design and dynamic control simulation software solutions from task points description. *International Conference of the IEEE Industrial Electronics Society (IECON)*, 2003

Peer-Reviewed Book Chapters

1. Keri L. Anderson, Jeffrey S. Anderson, Sourabh Palande, and Bei Wang. Topological data analysis of functional mri connectivity in time and space domains. In *Connectomics Neuroimaging (Lecture Notes in Computer Science, Proceedings of International Workshop on Connectomics in NeuroImaging), accepted*, volume 11083. Springer, 2018

2. Bei Wang, Roxana Bujack, Paul Rosen, Primoz Skraba, Harsh Bhatia, and Hans Hagen. Interpreting galilean invariant vector field analysis via extended robustness. In *Topological Methods in Data Analysis and Visualization V: Theory, Algorithms, and Applications (Proceedings of TopoInVis 2017), accepted.* Springer, 2018

3. Ellen Gasparovic, Maria Gommel, Emilie Purvine, Radmila Sazdanovic, Bei Wang, Yusu Wang, and Lori Ziegelmeier. A complete characterization of the 1-dimensionalintrinsic Čech persistence diagrams for metric graphs. In Erin Chambers, Brittany Terese Fasy, and Lori Ziegelmeier, editors, *Research in Computational Topology*, pages 33–56. Springer International Publishing, 2018

4. Sourabh Palande, Vipin Jose, Brandon Zielinski, Jeffrey Anderson, P. Thomas Fletcher, and Bei Wang. Revisiting Abnormalities in Brain Network Architecture Underlying Autism Using Topology-Inspired Statistical Inference. In Guorong Wu, Paul Laurienti, Leonardo Bonilha, and Brent C. Munsell, editors, *Connectomics Neuroimaging (Lecture Notes in Computer Science, Proceedings of International Workshop on Connectomics in NeuroImaging)*, volume 10511, pages 98–107. Springer, Cham, 2017

5. Attila Gyulassy, Aaron Knoll, Kah Chun Lau, Bei Wang, Peer-Timo Bremer, Michael E. Papka, Larry A. Curtiss, and Valerio Pascucci. Morse-Smale analysis of ion diffusion in Ab initio battery materials simulations. In Hamish Carr, Christoph Garth, and Tino Weinkauf, editors, *Topological Methods in Data Analysis and Visualization IV: Theory, Algorithms, and Applications (Proceedings of TopoInVis 2015)*, pages 135–149. Springer, Cham, 2017

6. Bei Wang and Ingrid Hotz. Robustness for 2D symmetric tensor field topology. In Thomas Schultz, Evren Özarslan, and Ingrid Hotz, editors, *Modeling, Analysis, and Visualization of Anisotropy*, pages 3–27. Springer International Publishing, 2017

7. Primoz Skraba and Bei Wang. Interpreting feature tracking through the lens of robustness. In Peer-Timo Bremer, Ingrid Hotz, Valerio Pascucci, and Ronald Peikert, editors, *Topological Methods in Data Analysis and Visualization III: Theory, Algorithms, and Applications (Proceedings of TopoInVis 2013)*, pages 19–38. Springer, 2014

Workshop Publications

1. Elizabeth Munch and Bei Wang. Reeb Space Approximation with Guarantees. *Fall Workshop on Computational Geometry (FWCG)*, 2015

2. Dan Maljovec, Avishek Saha, Peter Lindstrom, Peer-Timo Bremer, Bei Wang, Carlos Correa, and Valerio Pascucci. A comparative study of morse complex approximation using different neighborhood graphs. *Topology-Based Methods in Visualization (TopoInVis)*, 2013

3. Jeff M. Phillips and Bei Wang. Kernel distance for geometric inference. *Fall Workshop on Computational Geometry (FWCG)*, 2012

4. Paul Bendich, Sayan Mukherjee, and Bei Wang. Towards stratification learning through homology inference. *AAAI Fall Symposium on Manifold Learning and its Applications (AAAI)*, 2010

Other Publications and Manuscripts

1. Yuan Wang and Bei Wang. Topological inference of manifolds with boundary. *arXiv:1810.05759*, 2018

2. Mustafa Hajij, Bei Wang, and Paul Rosen. MOG: Mapper on graphs for relationship preserving clustering. *arXiv:1804.11242*, 2018

3. Paul Rosen, Bei Wang, Anil Seth, Betsy Mills, Adam Ginsburg, Julia Kamenetzky, Jeff Kern, and Chris R. Johnson. Using contour trees in the analysis and visualization of radio astronomy data cubes. *arXiv:1704.04561*, 2017

4. Braxton Osting, Sourabh Palande, and Bei Wang. Towards spectral sparsification of simplicial complexes based on generalized effective resistance. *arXiv:1708.08436*, 2017

5. Hamish Carr, Michael Kerber, and Bei Wang. Report from dagstuhl seminar 17292: Topology, computation and data analysis. *Dagstuhl Reports*, 2017

6. Brittany Terese Fasy and Bei Wang (with contributions by members of the WinComp-Top community). Open problems in computational topology. *SIGACT NEWS Open Problems Column*, 48(3), 2017

7. Dan Maljovec, Bei Wang, John Moeller, and Valerio Pascucci. Topology-based active learning. Technical Report UUSCI-2014-00, University of Utah, 2014

Students

Current Student

- Sourabh Palande (CS PhD, expected graduation: Spring 2020)
- Lin Yan (CS PhD, expected graduation: Spring 2022)
- Archit Rathore (CS PhD, expected graduation: Spring 2022)
- Adam Brown (Math PhD, expected graduation: Spring 2019, RA, informal advising).
- Yulong Liang (CS MS Master Project, expected graduation: Spring 2020)
- Yaodong Zhao (CS MS Research Project, expected graduation: Spring 2020)

Past Student

- Avani Sharma (CS MS Thesis Project, graduated Spring 2018, first job @ Goldman Sachs)
- Yiliang Shi (Undergraduate Thesis Project, graduated Spring 2018, graduate school @ Columbia University). **Honorable Mention in the Computing Research Association (CRA) Outstanding Undergraduate Researchers.**
- Keri Anderson (Undergraduate Thesis Project, graduated Spring 2018). **School of Computing Outstanding Graduating Senior award at the University of Utah**.
- William Garnes (Undergraduate REU, graduated Spring 2018, graduate school @ Clemson University). **College of Engineering Scholarship 2017-2018**. **GEM fellowship 2018**.
- Yixuan (Eric) Wang (MS ECE/CS Master Project, graduated Spring 2017, first Job @ InsideeSales).

Research Project Mentoring

- Sravan Neerati (CS MS): RA, Fall 2017.
- Chetal Patil (CS MS): RA, Fall 2017.
- Tim Sodergren (CS PhD): RA, Fall 2016 - Summer 2017.
- Vipin Jose (CS MS): RA, Spring 2017.
- Adam Conkey (CS PhD): Independent Study, Spring 2017.
- Matt Howa (Undergraduate REU): Spring 2017.
- Sam Leventhal (CS PhD): Independent Study, Spring 2016.
- Soumya S. Mishra (CS MS): Independent Study, Fall 2014.

- Informal project mentoring as a Research Computer Scientist: Brian Summa (CS PhD), Harsh Bhatia (CS PhD), Yan Zheng (CS PhD), Hoa Nguyen (CS PhD), Wathsala Widanaga-maachchi (CS PhD), Liang He (CS MS)

PhD/MS Committee
- Shusen Liu (CS PhD)
- Dan Maljovec (CS PhD)
- Zahra Fahimfar (CS MS)
- Brian Mark Kimmig (CS MS)
- Mustafa Youldash (La Trobe University, Australia): External Examiner of PhD Thesis.

Selected Invited Talks
1. ICERM TRIPODS Summer Bootcamp: Topology and Machine Learning, Aug. 2018.
2. CG Week 3rd Workshop on Geometry and Machine Learning, Jun. 2018.
3. IMA Workshop Bridging Statistics and Sheaves, May 2018.
4. NII Shonan Meeting Seminar 122 Analyzing Large Collections of Time Series, Feb. 2018.
5. Discrete Math Seminar Talk, University of South Florida, Oct. 2017.
6. Math Department Colloquium, University of South Florida, Oct. 2017.
7. Topology Seminar Talk, University of Florida, Oct. 2017.
8. Interdisciplinary Data Science Consortium, University of South Florida, Oct. 2017.
9. BIRS Workshop: Topological Data Analysis: Developing Abstract Foundations, Jul. 2017.
10. Dagstuhl Seminar: Computational Geometry, Apr. 2017.
11. BIRS Workshop: Topological Methods in Brain Network Analysis, May. 2017.
12. Topological Data Analysis and Related Topics (TDART), AIMR Tohoku University Advanced Institute for Materials Research, Feb. 2017.
13. Excellence Center at Linköping - Lund on Information Technology (ELLIIT) distinguished lecture, Linköping University, Sweden, May. 2016.
14. Topology, Geometry, and Data Analysis Conference at Ohio State University, May. 2016.
15. Pacific Northwest National Laboratory, 2015.
16. SAMSI workshop on Topological Data Analysis, research program on Low Dimensional Structure in High Dimensional Systems, 2014.
17. Computer Science Department, Ohio State University, 2014.
18. Computer Science Department Colloquium, University of Connecticut, 2013.
19. Colloquium Series in School of Engineering, University of Bridgeport, 2013.
20. IMA Workshop on Modern Applications of Homology and Cohomology, 2013.
21. PSA Technical Workshop on Topological Data Analysis and Visualization for Large-Scale and High-Dimensional Science Discovery (Organizer and Speaker), 2013.
22. SIAM Conference on Applied Algebraic Geometry (AG), Mini-symposium on Applied and Computational Topology, 2013.

23. AMS-MAA Joint Mathematics Meeting (JMM), special session on Computational and Applied Topology, 2012.
24. Theory Lunch, School of Computer Science, Carnegie Mellon University, 2012.
25. Applied Math Seminar, Department of mathematics, University of Utah, 2012.
26. Yaroslavl International Conference Discrete Geometry Dedicated to Centenary of A.D.Alexandrov, Russia, 2012.
27. Summer school of the Delaunay Laboratory, Russia, 2012.
28. ACM Symposium on Computational Geometry (SOCG) Workshop on Computational Topology, 2012.
29. Fields Institute for Research in Mathematical Sciences, Thematic Program on Discrete Geometry and Applications, Workshop on Computational Topology, 2011.

Internal Service

- College of Engineering Academic Misconduct Committee, 2018 - present.
- College of Engineering Scholarship Committee, 2017 - present.
- Graduate Admissions Committee, School of Computing, 2017 - present.
- Organizer, Utah and West Coast Joint Party at IEEE VIS Conference (School of Computing and SCI Institute, Univ. of Utah), Oct. 2017.

External Service

Program Committees
1. International Symposium on Computational Geometry (SOCG), 2019.
2. IEEE Visualization Conference (VIS), SciVis, 2017, 2018.
3. EG/VGTC Conference on Visualization (EuroVis), 2017, 2018.
4. Symposium on Visualization in Data Science (VDS) at IEEE VIS, 2017, 2018.
5. IEEE Symposium on Large Data Analysis and Visualization (LDAV), 2016, 2017.
6. Spring Conference on Computer Graphics (SCCG), 2017.
7. High-Performance Computing (HPC) China, Scientific Visualization, 2016.
8. Topology-Based Methods in Visualization (TopoInVis), 2015, 2017.
9. Grace Hopper Conference Gaming/Graphics/Animation (GFX) track committee, 2016.
10. EG/VGTC Conference on Visualization (EuroVis), Short Paper Track, 2016.

Workshop/Tutorial Organization
- Organizer: Dagstuhl Seminar: Topology, Computation and Data Analysis, 2019.
- Organizer: Dagstuhl Seminar: Topology, Computation and Data Analysis, 2017.
- Organizer: 6th Annual Mini-symposium on Computational Topology co-located with 33rd International Symposium on Computational Geometry, 2017.
- Organizer and Speaker: Topological Data Analysis in Biomedicine at the 7th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB), 2016.

- Organizer and Speaker: Recent Advancements of Feature-based Flow Visualization and Analysis at IEEE IEEE Visualization Conference (VIS), 2016.
- Organizer and Speaker: Topological Data Analysis and Visualization for Large-Scale and High-Dimensional Science Discovery. International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA), 2013.

Proposal Panelist
- Two NSF review panels since 2016.

Journal/Conference Referee
- Transactions on Medical Imaging (TMI), Discrete & Computational Geometry (DCG), Computational Geometry Theory and Applications (CGTA), International Journal of Computational Geometry & Applications (IJCGA), Journal of Computational Geometry (JoCG), IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB), IEEE Transactions on Visualization and Computer Graphics (TVCG), AMS Short Course in Joint Math Meetings (JMM), ACM Symposium on Theory of Computing (STOC), ACM-SIAM Symposium on Discrete Algorithms (SODA), (ACM) Symposium on Computational Geometry (SOCG), European Symposium on Algorithms (ESA), SIAM Algorithm Engineering and Experiments (ALENEX), IEEE Conference on Visualization (VIS), Eurographics Conference on Visualization (EuroVis), Topology-Based Methods in Visualization (TopoInVis), IEEE Symposium on Large Data Analysis and Visualization (LDAV), High-Performance Computing (HPC) China, Applied and Numerical Harmonic Analysis Series (Birkhauser/Springer), etc.

Other Synergistic Activities
- Session Chair, IEEE Conference on Visualization (VIS), SciVis, 2016-2018.
- Session Chair, IEEE Symposium on Large Data Analysis and Visualization (LDAV), 2016.
- Founding member of Women in Visualization Mentoring Network, 2015.
- Member of Women in Computational Topology Network, 2015-present.
- Member and Speaker, Applied Algebraic Topology Research Network, 2014-2015.
- Session Chair, Topology-Based Methods in Visualization (TopoInVis), 2013.
- Organizer for Visualization Seminar, SCI Institute, University of Utah, 2011-2012.
- Session Chair, International Conference of the IEEE Industrial Electronics Society (IECON), 2003.
- President, University Chapter, Univ. of Bridgeport, The Honor Society of Upsilon Pi Epsilon, 2003.
- Member of ACM Programming Contest team representing SUNY at Stony Brook, 2003.
- Member of ACM Programming Contest team representing University of Bridgeport, 2001.

Community Engagement
- Invited Speaker at HackTheU, Oct. 2017. HackTheU is Utah's largest hackathon where students from across the state and nation develop their solutions to the various prompts through augmented reality, virtual reality, IoT, and many other kinds of applications.

- Invited speaker at the Future in Review (FiRe) Conference, 2017. The FiRe conference exposes world experts and participants to new ideas in a manner that produces an accurate portrait of the future in technology, including the global economy, cloud computing, biology and medical diagnostics, policy, netbooks, space travel, sustainability, and other fields that contribute to technology outcomes.
- Lecturer/Module Designer at Hi-GEAR (Girls Engineering Abilities Realized) Camp, 2016, 2018. Hi-GEAR is part of Engineering Summer Camps at the Univ. of Utah. It is designed to expose young women (currently in 9th-12th grade) to a variety of engineering and computer science careers with hands-on experiential learning and collaborative team projects.

Advisors

Ph.D advisor: Herbert Edelsbrunner, Duke University. (2004-2010)
Postdoctoral advisor: Valerio Pascucci, University of Utah. (2010-2011)