

# ASSEFAW H. GEBREMEDHIN

(Curriculum Vitae, Updated June 2024)

*Associate Professor*, School of Electrical Engineering and Computer Science  
Washington State University, Pullman, WA

*Director*, Scalable Algorithms for Data Science Laboratory (SCADS)

*Lead PI and Director*, VICEROY Northwest Institute for Cybersecurity Education and Research (CySER)

*Program Director*, Graduate Training Program in AI and Data Science for Complex Engineering Applications, Graduate Assistance in Areas of National Need (GAANN)

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## RESEARCH INTERESTS

- *Data science and AI* • *High-performance computing* • *Graph algorithms*
- *Cybersecurity* • *Bio and health informatics* • *Energy ecosystems*

## EDUCATION

|     |                        |                                  |      |
|-----|------------------------|----------------------------------|------|
| PhD | Computer Science       | University of Bergen, Norway     | 2003 |
| MS  | Computer Science       | University of Bergen, Norway     | 1999 |
| BS  | Computer Science       | University of Bergen, Norway     | 1996 |
| BS  | Electrical Engineering | Addis Ababa University, Ethiopia | 1992 |

## APPOINTMENT HISTORY

|               |   |
|---------------|---|
| 08/20–present | <i>Associate Professor</i> , School of EECS, Washington State University              |
| 2014–2020     | <i>Assistant Professor</i> , School of EECS, Washington State University              |
| 2010–2014     | <i>Research Assistant Professor</i> , Dept. of Computer Science, Purdue University    |
| 2008–2010     | <i>Research Assistant Professor</i> , Computing Research Institute, Purdue University |
| 2006–2008     | <i>Research Scientist</i> , Dept. of Computer Science, Old Dominion University        |
| 2004–2006     | <i>Postdoctoral Fellow</i> , Dept. of Computer Science, Old Dominion University       |
| 1999–2003     | <i>Doctoral Fellow</i> , Dept. of Informatics, University of Bergen, Norway           |

## LEADERSHIP TRAINING

- Completed the Fall 2022-Spring 2023 Research Leadership Program (RLP) organized by WSU Office of Research. The fall program consisted of an 8-session research leadership course led by the AtKisson Training Group (ATG).

## AWARDS

- 2024 EECS Outstanding Program Leadership Award (for contributions to cybersecurity)
- 2022 Reid Miller Teaching Excellence Award
- 2022 EECS Teaching Excellence Award
- 2021 George Pólya Prize in Applied Combinatorics (for joint work with Fredrik Manne and Alex Pothen)

- National Science Foundation CAREER Award, 2016  
(Project title: *Fast and Scalable Combinatorial Algorithms for Data Analytics*)
- Nominated for Best Paper Award, IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC 2021).
- Innovation Award, Graph Challenge, IEEE High Performance Extreme Computing Conference (HPEC 2019 and HPEC 2018)
- Founding member and co-investigator in the Combinatorial Scientific Computing and Petascale Simulations Institute (CSCAPES), a multi-institution project funded by the Department of Energy under the SciDAC-2 program, 2006–2012
- L. Meltzer’s Student Award for Outstanding Talent, University of Bergen, 2001 and 2003
- Doctoral Fellowship, University of Bergen, 1999–2003

GOOGLE SCHOLAR CITATION PROFILE (Google Scholar, June 2024):

- H-index: 27                      i10-index: 49
- Total citations: 2,683              Citations since 2019: 1,358

#### PUBLICATIONS LIST

##### Edited Volumes

1. A.H. Gebremedhin, E. Boman and B. Ucar (Eds.), *Proceedings of the Seventh SIAM Workshop on Combinatorial Scientific Computing*, 2016, SIAM.
2. T. Sørøvik, F. Manne, R. Moe, and A.H. Gebremedhin (Eds.), *New Paradigms for High Performance Computing in Industry and Academia*, Para 2000, Workshop on Applied Parallel Computing, Lecture Notes in Computer Science 1947, 2001, Springer.

##### Magazine Articles

3. J. Crabb and A. Gebremedhin, *Cybersecurity Education and Research: Experiences in Training the Next Generation of Cyber Professionals*, CYBER Magazine, MCPA, May 2024.
4. H. Catanese, C. Hauser and A.H. Gebremedhin, *Evaluation of Native and Transfer Students’ Success in a Computer Science Course*, ACM Inroads, 9(2), 53–57, 2018.

##### Book Chapters

5. A.H. Gebremedhin, M. Patwary and F. Manne, *Paradigms for Effective Parallelization of Inherently Sequential Graph Algorithms on Multi-Core Architectures* in Handbook of Research on Methodologies and Applications of Supercomputing, edited by V. Milutinovic and M. Kotlar, IGI Global, 2021.
6. M. Ilic, R. Jaddivada and A.H. Gebremedhin, *Unified Modeling for Emulating Electric Energy Systems: Toward Digital Twin That Might Work* in Handbook of Research on Methodologies and Applications of Supercomputing, edited by V. Milutinovic and M. Kotlar, IGI Global, 2021.

## Journal Papers

7. S. Patil, S. Roberts and A. Gebremedhin, *Network analysis of driver genes in human cancers*, *Frontiers in Bioinformatics*, 20 pages, Accepted, June 2024.
8. J. Halvorsen, C. Izurieta, H. Cai and A. Gebremedhin, *Applying Generative Machine Learning to Intrusion Detection: A Systematic Mapping Study and Review*, *ACM Computing Surveys*, 30 pages, March 2024.
9. J. Halvorsen and A. Gebremedhin, *Generative Machine Learning for Cyber Security*, *Military Cyber Affairs*, Vol 7, Iss. 1, Article 4, 2024.
10. P. Hystad, O. Amram, F. Oje, A. Larkin, K. Boakye, A. Avery, A. Gebremedhin and G. Duncan, *Bring Your Own Location Data: Use of Google Smartphone Location History Data for Environmental Health Research*, *Environmental Health Perspectives* 130:11 CID: 117005. 2022. <https://doi.org/10.1289/EHP10829>
11. X. Liu, M. Halappanavar, K. Barker, A. Lumsdaine and A.H. Gebremedhin, *Direction-Optimizing Label Propagation Framework for Structure Detection in Graphs: Design, Implementation, and Experimental Analysis*, *ACM Journal of Experimental Algorithmics*, Vol 27, Article No 1.12, pp 1-31, 2022. <https://doi.org/10.1145/3564593>
12. S. Patil, H. Catanese, K. Brayton, E. Lofgren and A.H. Gebremedhin. *Sequence Similarity Network Analysis Provides Insight into the Temporal and Geographical Distribution of Mutations in SARS-CoV-2 Spike Protein*, *Viruses* 2022, 14, 1672. <https://doi.org/10.3390/v14081672>.
13. L. Wang, J. Halvorsen, S. Pannala, A. Srivastava, A.H. Gebremedhin and N. Schulz, *CP-SyNet: A Tool for Generating Customized Cyber-Power Synthetic Network for Distribution System with Distributed Energy Resources*, *IET Smart Grid*, 5(6), 463-477 (2022).
14. L. Wang, A. Dubey, A.H. Gebremedhin, A. Srivastava and N. Schulz, *MPC-Based Decentralized Voltage Control in Power Distribution Systems with EV and PV Coordination*, *IEEE Transactions on Smart Grid*, vol. 13, no. 4, pp. 2908-2919, July 2022. doi: 10.1109/TSG.2022.3156115.
15. J. Stachofsky, A.H. Gebremedhin and R. Crossler, *Cast to Vote: A Socio-technical Network Analysis of an Election Smartphone Application*, *Digital Government: Research and Practice*, Volume 3, Issue 1, January 2022, Article No 3, pp 117. <https://doi.org/10.1145/3501031>
16. Y. Du, G. Warnell, A.H. Gebremedhin, P. Stone and M. Taylor, *Lucid Dreaming for Experience Replay: Refreshing Past States with Current Policy*, *Neural Computing and Applications* (2021). <https://doi.org/10.1007/s00521-021-06104-5>
17. R. Saeedi, K.S. Sajan, K. Davies, A. Srivastava and A.H. Gebremedhin, *An Adaptive Machine Learning Framework for Behind-the-Meter Load/PV Disaggregation*, *IEEE Transaction on Industrial Informatics*, Vol 17, No 10, pp 7060-7069, 2021.
18. R. Saeedi, K. Sasani and A.H. Gebremedhin, *Collaborative Multi-Expert Active Learning for Mobile Health Monitoring: Architectures, Algorithms and Evaluation*, *Sensors*, 20(7), 1932, 2020.
19. S. Norgaard, R. Saeedi and A.H. Gebremedhin, *Multi-Sensor Time Series Classification for Activity Tracking Under Variable Length*, *IEEE Sensors Journal*, Vol 20, No 5, 2701–2709, 2020.

20. R. Saeedi and A.H. Gebremedhin, *A Signal-level Transfer Learning Framework for Autonomous Reconfiguration of Wearable Systems*, IEEE Transactions on Mobile Computing, Vol 19, Number 3, 513–527, 2020. DOI: 10.1109/TMC.2018.2878673.
21. A.H. Gebremedhin and A. Walther, *An Introduction to Algorithmic Differentiation*, WIREs Data Mining and Knowledge Discovery, 2020; 10:e1334. <https://doi.org/10.1002/widm.1334>
22. Y. Du, M. Taylor and A.H. Gebremedhin, *Analysis of University Fitness Center Data Uncovers Interesting Patterns, Enables Prediction*, IEEE Transactions on Knowledge and Data Engineering, Vol 31, Issue 8, 1478–1490, 2019.
23. H. Catanese, K. Brayton and A.H. Gebremedhin, *A Nearest-neighbors Network Model for Sequence Data Reveals New Insight into Genotype Distribution of a Pathogen*, BMC Bioinformatics (2018) 19:475. <https://doi.org/10.1186/s12859-018-2453-2>.
24. H. Lu, M. Halappanavar, D. Chavarrí a Miranda, A.H. Gebremedhin, A. Panyala and A. Kalyanaraman, *Algorithms for Balanced Graph Colorings with Applications in Parallel Computing*, IEEE Transactions on Parallel and Distributed Systems, 28(5), 1240–1256, 2017.
25. H.N. Catanese, K.A. Brayton and A.H. Gebremedhin, *RepeatAnalyzer: A Tool for Analyzing and Managing Short-Sequence Repeat Data*, BMC Genomics 2016 17:422. DOI: 10.1186/s12864-016-2686-2.
26. Z.T.H. Khumalo, H.N. Catanese, N. Leisching, P. Hove, N.E. Collins, M.E. Chaisit, A.H. Gebremedhin, M.C. Oosthuizen and K.A. Brayton, *Characterization of Anaplasma marginale subspecies centrale using msp1aS genotyping reveals wildfire reservoir*, Journal of Clinical Microbiology, 2016, 54:10, 2503-2512.
27. M. Wang, A.H. Gebremedhin and A. Pothen, *Capitalizing on Live Variables: New Algorithms for Efficient Hessian Computation via Automatic Differentiation*, Mathematical Programming Computation, 8(4), 393–433, 2016. DOI = 10.1007/s12532-016-0100-3.
28. R.A. Rossi, D.F. Gleich and A.H. Gebremedhin, *Parallel Maximum Clique Algorithms with Applications to Network Analysis*, SIAM Journal on Scientific Computing, Vol 37, Issue 5, pages C589–C618, 2015.
29. B. Pattabiraman, M.M.A. Patwary, A.H. Gebremedhin, W.K. Liao and A. Choudhary, *Fast Algorithms for the Maximum Clique Problem on Massive Graphs with Applications to Overlapping Community Detection*, Internet Mathematics, Vol 11, No 4-5, pp 421–448, 2015.
30. A.H. Gebremedhin, D. Nguyen, M.M.A. Patwary and A. Pothen, *ColPack: Software for Graph Coloring and Related Problems in Scientific Computing*, ACM Transactions on Mathematical Software, Vol 40, No 1, pp 1–31, 2013.
31. U. Catalyurek, J. Feo, A.H. Gebremedhin, M. Halappanavar and A.Pothen, *Graph Coloring Algorithms for Multi-core and Massively Multithreaded Architectures*, Parallel Computing, Vol 38, pp 576-594, 2012.
32. D. Bozdağ, U. Catalyurek, A.H. Gebremedhin, F. Manne, E.G. Boman and F. Özgüner, *Distributed-memory Parallel Algorithms for Distance-2 Coloring and Related Problems in Derivative Computation*, SIAM Journal on Scientific Computing, Vol 32, Issue 4, pp 2418–2446, 2010.
33. A.H. Gebremedhin, A. Pothen, A. Tarafdar and A. Walther, *Efficient Computation of Sparse Hessians using Coloring and Automatic Differentiation*, INFORMS Journal on Computing, Vol 21, No 2, pp 209–223, 2009.

34. D. Bozdağ, A.H. Gebremedhin, F. Manne, E.G. Boman and U. Catalyurek, *A Framework for Scalable Greedy Coloring on Distributed Memory Parallel Computers*, Journal of Parallel and Distributed Computing, Vol 68, No 4, pp 515–535, 2008.
35. A.H. Gebremedhin, A. Tarafdar, F. Manne and A. Pothen, *New Acyclic and Star Coloring Algorithms with Applications to Hessian Computation*, SIAM Journal on Scientific Computing, Vol 29, No 3, pp 1042–1072, 2007.
36. A.H. Gebremedhin, M. Essaidi, I. Guerin Lassous, J. Gustedt, and J.A. Telle, *PRO: A Model for the Design and Analysis of Efficient and Scalable Parallel Algorithms*, Nordic Journal of Computing, Vol 13, pp 1–25, 2006.
37. A.H. Gebremedhin, F. Manne and A. Pothen, *What Color Is Your Jacobian? Graph Coloring for Computing Derivatives*, SIAM Review Vol 47, No 4, pp 629–705, 2005.
38. A.H. Gebremedhin, I. Guérin Lassous, J. Gustedt and J.A. Telle, *Graph Coloring on Coarse Grained Multicomputers*, Discrete Applied Math, Vol 131/1, pp 179–198, 2003.
39. A.H. Gebremedhin and F. Manne, *Scalable Parallel Graph Coloring Algorithms*, Concurrency: Practice and Experience, Vol 12, pp 1131–1146, 2000.

### Conference Proceedings

40. J. Crabb, C. Hundhausen and A. Gebremedhin, *A Critical Review of Cybersecurity Education in the United States*, ACM Technical Symposium on Computer Science Education (SIGCSE 2024). <https://doi.org/10.1145/3626252.3630757>
41. J. Briccoe, C. DeSmet, K. Wuestney, A. Gebremedhin, R. Fritz, and D.J. Cook *Reducing Sample Selection Bias in Clinical Data through Generation of Multi-Objective Synthetic Data*, The 11th International Conference on Biomedical Engineering and Systems (ICBES 2024).
42. X. Liu, J. Firoz, S. Aksoy, I. Amburg, A. Lumsdaine, C. Joslyn, B. Praggastis and A.H. Gebremedhin, *High-order Line Graphs of Non-uniform Hypergraphs: Algorithms, Applications, and Experimental Analysis*, 2022 IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2022, pp. 784-794, doi: 10.1109/IPDPS53621.2022.00081.
43. X. Liu, J. Firoz, A.H. Gebremedhin and A. Lumsdaine, *NWHy: A Framework for Hypergraph Analytics: Representations, Data structures, and Algorithms*, 2022 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW), 2022, pp. 275-284, doi: 10.1109/IPDPSW55747.2022.00057.
44. X. Liu, J. Firoz, A. Lumsdaine, C. Joslyn, S. Aksoy, B. Praggastis and A.H. Gebremedhin, *Parallel Algorithms for Efficient Computation of High-Order Line Graphs of Hypergraphs*, 2021 IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC), 2021, pp. 312-321, doi: 10.1109/HiPC53243.2021.00045. [**Nominated for Best Paper Award**]
45. G. Krishnamoorthy, A. Dubey and A. H. Gebremedhin, *An Open-source Environment for Reinforcement Learning in Power Distribution Systems*, 2022 IEEE Power & Energy Society General Meeting (PESGM), 2022, pp. 1-5, doi: 10.1109/PESGM48719.2022.9916862.
46. G. Krishnamoorthy, A. Dubey and A.H. Gebremedhin, *Reinforcement Learning for Battery Energy Storage Dispatch Augmented with Model-based Optimizer*, 2021 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm), 2021, pp. 289-294, doi: 10.1109/SmartGridComm51999.2021.9632292.

47. J. Briscoe, A. Gebremedhin, L. Holder and D. Cook, *Adversarial Creation of a Smart Home Testbed for Novelty Detection*, AAAI Spring Symposium Series, March 2022.
48. S. Ghosh, Y. Guo, P. Balaji and A.H. Gebremedhin, *RMACXX: An Efficient High-Level C++ Interface over MPI-3 RMA*, IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid 2021), May 10-13, 2021, Melbourne, Australia.
49. X. Liu, M. Halappanavar, K. Barker, A. Lumsdaine and A.H. Gebremedhin, *Direction-optimizing Label Propagation and its Application to Community Detection*, Computing Frontiers, 2020.
50. Y. Du, G. Warnell, A.H. Gebremedhin, P. Stone and M. Taylor, *Work-in-Progress: Corrected Self Learning via Demonstrations*, Proceedings of the Adaptive and Learning Agents Workshop at AAMAS. May 2020.
51. S. Ghosh, M. Halappanavar, A. Kalyanaraman, A. Khan and A.H. Gebremedhin, *Exploring MPI Communication Models for Graph Applications Using Graph Matching as a Case Study*, IEEE International Parallel and Distributed Processing Symposium (IPDPS 2019), May 2019, Rio de Janeiro, Brazil, 10 pages.
52. X. Liu, J. Firos, M. Zalewski, M. Halappanavar, K. Baker, A. Lumsdaine and A.H. Gebremedhin, *Distributed Direction-optimizing Label Propagation for Community Detection*, 2019 IEEE High Performance Extreme Computing Conference (HPEC), Waltham, MA, USA, 2019, pp1–6. [**2019 Graph Challenge Innovation Award**].
53. E. Khaledian, A.H. Gebremedhin, K. Brayton and S. Broschat, *A Network Science Approach for Determining the Ancestral Phylum of Bacteria*, In Proceedings of the 2018 ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics (BCB '18). ACM, New York, NY, USA, 398-403. DOI: <https://doi.org/10.1145/3233547.3233575>
54. S. Ghosh, M. Halappanavar, A. Tumeo, A. Kalyanaraman, H. Lu, D. Chavarria-Miranda, A. Khan and A. H. Gebremedhin, *Distributed Lowrank Algorithm for Graph Community Detection*, 2018 IEEE International Parallel and Distributed Processing Symposium (IPDPS), Vancouver, BC, 2018, pp. 885-895. doi: 10.1109/IPDPS.2018.00098
55. S. Ghosh, M. Halappanavar, A. Tumeo, A. Kalyanaraman and A.H. Gebremedhin, *miniVite: A Graph Analytics Benchmarking Tool for Massively Parallel Systems*, 2018 IEEE/ACM Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS), Dallas, TX, USA, 2018, pp. 51-56. doi: 10.1109/PMBS.2018.8641631 (Supercomputing'18 Workshop)
56. K. Sasani, M. Namaki and A.H. Gebremedhin, *Network Similarity Prediction in Time-evolving Graphs: A Machine Learning Approach*, 2018 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW), Vancouver, BC, 2018, pp. 1184-1193. doi: 10.1109/IPDPSW.2018.00183.
57. S. Norgaard, R. Saeedi, K. Sasani and A.H. Gebremedhin, *Synthetic Sensor Data Generation for Health Applications: A Supervised Deep Learning Approach*, 2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, HI, 2018, pp. 1164-1167. doi: 10.1109/EMBC.2018.8512470
58. R. Saeedi, K. Sasani, S. Norgaard and A.H. Gebremedhin, *Personalized Human Activity Recognition using Wearables: A Manifold Learning-based Knowledge Transfer*, 2018 40th

- Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, HI, 2018, pp. 1193-1196. doi: 10.1109/EMBC.2018.8512533
59. K. Sasani, M. Namaki, Y. Wu and A.H. Gebremedhin, *Multi-metric Graph Query Performance Prediction*, In: Pei J., Manolopoulos Y., Sadiq S., Li J. (eds) Database Systems for Advanced Applications. DASFAA 2018. Lecture Notes in Computer Science, vol 10827. Springer, Cham. [https://doi.org/10.1007/978-3-319-91452-7\\_19](https://doi.org/10.1007/978-3-319-91452-7_19)
  60. M. H. Namaki, K. Sasani, Y. Wu and A.H. Gebremedhin, *Performance Prediction for Graph Queries*, In Proceedings of the 2nd International Workshop on Network Data Analytics (NDA'17), Akhil Arora, Shourya Roy, and Arnab Bhattacharya (Eds.). ACM, New York, NY, USA, Article 4, 9 pages. DOI: <https://doi.org/10.1145/3068943.3068947> (Workshop at the ACM SIGMOD International Conference on Management of Data).
  61. S. Ghosh, M. Halappanavar, A. Tumeo, A. Kalyanaraman and A.H. Gebremedhin, *Scalable Distributed-memory Community Detection using Vite*, IEEE High Performance Extreme Computing Conference (HPEC 2018), September 2018, Waltham, MA, 8 pages. DOI: 10.1109/HPEC.2018.8547534 [**2018 Graph Challenge Student Innovation Award**].
  62. R. Saeedi, S. Norgaard, A.H. Gebremedhin, *A Closed-loop Deep Learning Architecture for Robust Activity Recognition using Wearable Sensors*, 2017 IEEE International Conference on Big Data (Big Data), Boston, MA, 2017, pp. 473-479. doi: 10.1109/BigData.2017.8257960
  63. R. Saeedi, K. Sasani and A.H. Gebremedhin, *Co-MEAL: Cost-Optimal Multi-Expert Active Learning Architecture for Mobile Health Monitoring*, In Proceedings of the 8th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB '17). ACM, New York, NY, USA, 432-441. DOI: <https://doi.org/10.1145/3107411.3107430>
  64. R. Saeedi, H. Ghasemzadeh and A.H. Gebremedhin, *Transfer Learning Algorithms for Autonomous Configuration of Wearable Systems*, 2016 IEEE International Conference on Big Data (Big Data), Washington, DC, 2016, pp. 563-569. doi: 10.1109/BigData.2016.7840648
  65. S. Ghosh and A.H. Gebremedhin, *Parallelization of Bin Packing on Multicore Systems*, 2016 IEEE 23rd International Conference on High Performance Computing (HiPC), Hyderabad, 2016, pp. 311-320. doi: 10.1109/HiPC.2016.044
  66. S. Ghosh, J.R. Hammond, A.J. Pena, P. Balaji, A.H. Gebremedhin and B. Chapman, *One-sided Interface for Matrix Operations using MPI-3 RMA: A Case Study with Elemental*, 2016 45th International Conference on Parallel Processing (ICPP), Philadelphia, PA, 2016, pp. 185-194. doi: 10.1109/ICPP.2016.28
  67. H. Lu, M. Halappanavar, D. Chavarría Miranda, A.H. Gebremedhin and A. Kalyanaraman, *Balanced Coloring for Parallel Computing Applications*, 2015 IEEE International Parallel and Distributed Processing Symposium, Hyderabad, 2015, pp. 7-16. doi: 10.1109/IPDPS.2015.113
  68. R.A. Rossi, D.F. Gleich, A.H. Gebremedhin and M.M.A. Patwary, *Fast Maximum Clique Algorithms for Large Graphs*, In Proceedings of the 23rd International Conference on World Wide Web (WWW '14 Companion). ACM, New York, NY, USA, 365-366. DOI: <https://doi.org/10.1145/2567948.2577283>
  69. B. Pattabiraman, M.M.A. Patwary, A.H. Gebremedhin, W.K. Liao and A. Choudhary, *Fast Algorithms for the Maximum Clique Problem on Massive Sparse Graphs*, In: Bonato A., Mitzenmacher M., Praat P. (eds) Algorithms and Models for the Web Graph. WAW 2013.

- Lecture Notes in Computer Science, vol 8305. Springer, Cham. [https://doi.org/10.1007/978-3-319-03536-9\\_13](https://doi.org/10.1007/978-3-319-03536-9_13).
70. B. Letschert, K. Kulshreshtha, A. Walther, D. Nguyen, A.H. Gebremedhin and A. Pothen, *Exploiting Sparsity in Automatic Differentiation on Multicore Architectures*, In S. Forth et al. (Eds.), Recent Advances in Algorithmic Differentiation (AD2012), Lecture Notes in Computational Science and Engineering, vol 87. Springer, Berlin, Heidelberg. DOI: 10.1007/978-3-642-30023-3\_14.
  71. S.H.K. Narayanan, B. Norris, P. Hovland and A.H. Gebremedhin, *Implementation of Partial Separability in a Source to Source Transformation AD Tool*, In S. Forth et al. (Eds.), Recent Advances in Algorithmic Differentiation (AD2012), Lecture Notes in Computational Science and Engineering, vol 87. Springer, Berlin, Heidelberg. DOI: 10.1007/978-3-642-30023-3\_31.
  72. M.M.A. Patwary, A.H. Gebremedhin and A. Pothen, *New Multithreaded Ordering and Coloring Algorithms for Multicore Architectures*, In E. Jeannot, R. Namyst and J. Roman (Eds.), Euro-Par 2011, Lecture Notes in Computer Science 6853, Part II, pp 250–262, 2011.
  73. S.H.K. Narayanan, B. Norris, P. Hovland, D. Nguyen and A.H. Gebremedhin, *Sparse Jacobian Computation using ADIC2 and ColPack*, Procedia Computer Science, 4:2115–2123, 2011. Proceedings of the International Conference on Computational Science, ICCS 2011.
  74. U. Catalyurek, F. Dobrian, A.H. Gebremedhin, M. Halappanavar and A. Pothen, *Distributed-memory Parallel Algorithms for Matching and Coloring*, 2011 IEEE International Symposium on Parallel and Distributed Processing Workshops and Phd Forum, Shanghai, 2011, pp. 1971–1980. doi: 10.1109/IPDPS.2011.360
  75. A.H. Gebremedhin, A. Pothen and A. Walther, *Exploiting Sparsity in Jacobian Computation via Coloring and Automatic Differentiation: a Case Study in a Simulated Moving Bed process*, In C. Bischof et al. (Eds.), Advances in Automatic Differentiation (AD2008), Lecture Notes in Computational Science and Engineering 64, pp 339–349, 2008.
  76. E.G. Boman, D. Bozdağ, U. Catalyurek, K. Devine, A.H. Gebremedhin, P. Hovland and A. Pothen, *Combinatorial Algorithms for Computational Science and Engineering*, Journal of Physics: Conference Series 125 (2008) 012071. SciDAC 2008.
  77. E.G. Boman, D. Bozdağ, U. Catalyurek, K. Devine, A.H. Gebremedhin, P. Hovland, A. Pothen and M.M. Strout, *Enabling High Performance Computational Science through Combinatorial Algorithms*, Journal of Physics: Conference Series 78 (2007) 012058. SciDAC 2007.
  78. S. Bhomwick, E.G. Boman, K. Devine, A.H. Gebremedhin, B. Hendrickson, P. Hovland, T. Munson and A. Pothen, *Combinatorial Algorithms Enabling Computational Science: Tales from the Front*, Journal of Physics: Conference Series 46 (2006), 453–457, SciDAC 2006.
  79. D. Bozdağ, U. Catalyurek, A.H. Gebremedhin, F. Manne, E.G. Boman and F. Özgüner, *A Parallel Distance-2 Graph Coloring Algorithm for Distributed Memory Computers*, In L.T. Yang et al. (Eds.): HPC 2005, Lecture Notes in Computer Science 3726, pp 796–806, 2005.
  80. E.G. Boman, D. Bozdağ, U. Catalyurek, A.H. Gebremedhin and F. Manne, *A Scalable Parallel Graph Coloring Algorithm for Distributed Memory Computers*, In J. Cunha and P. Medeiros (Eds.): EuroPar 2005, Lecture Notes in Computer Science 3648, pp 241–251, 2005.
  81. A.H. Gebremedhin, F. Manne and T. Woods, *Speeding up Parallel Graph Coloring*, In J. Dongarra, K. Madsen, and J. Wasniewski (Eds.): Para 2004, Lecture Notes in Computer Science 3732, pp 1079–1088, 2005.



82. A.H. Gebremedhin, F. Manne and A. Pothen, *Parallel Distance-k Coloring Algorithms for Numerical Optimization*, In B. Monien and R. Feldmann (Eds.): EuroPar 2002, Lecture Notes in Computer Science 2400, pp 912-921, 2002.
83. A.H. Gebremedhin, I. Guérin Lassous, J. Gustedt and J.A. Telle, *PRO: a Model for Parallel Resource-Optimal Computation*, IEEE International Symposium on High Performance Computing Systems and Applications, pp 106–113, 2002
84. A.H. Gebremedhin, I. Guérin Lassous, J. Gustedt and J.A. Telle, *Graph Coloring on a Coarse Grained Multiprocessor*, In U. Brandes and D. Wagner (Eds.): WG 2000, Lecture Notes in Computer Science 1928, pp 184–195, 2000.
85. A.H. Gebremedhin and F. Manne, *Parallel Graph Coloring Algorithms using OpenMP*, EWOMP 99, First European Workshop on OpenMP, Sept 1999, Lund, Sweden.

#### **News Journal Articles**

86. E. Boman, A. Gebremedhin and S. Toledo, *SIAM Workshop on Combinatorial Scientific Computing Inaugurates Proceedings and Best Paper Award*, SIAM News Dec 2016.
87. A. Pothen, A.H. Gebremedhin, F. Dobrian; E.G. Boman, K.D. Devine, B.A. Hendrickson; P. Hovland, B. Norris, J. Utke; U. Catalyurek; M.M. Strout; *Combinatorial Algorithms for Petascale Science*, SciDAC Review, Issue 5, pp 26–35, Fall 2007.
88. A.H. Gebremedhin, *The Third SIAM Workshop on Combinatorial Scientific Computing*, SIAM News Vol 40, No 4, May 2007.

#### **Workshop Short Papers/Extended Abstracts**

89. M. Wang, A.H. Gebremedhin and A. Pothen, *Performance Evaluation of Automatic Differentiation Algorithms for Hessian Computation*, The Seventh International Conference on Algorithmic Differentiation (AD 2016), Christ Church Oxford, UK, September 2016.
90. M. Wang, A.H. Gebremedhin and A. Pothen, *An Efficient Automatic Differentiation Algorithm for Hessians: Working With Live Variables*, The Sixth SIAM Workshop on Combinatorial Scientific Computing (CSC14), Lyons, France, July 2014.
91. A.H. Gebremedhin and A. Pothen, *Combinatorial Mathematics and Algorithms at Exascale: Challenges and Promising Directions*, SIAM Workshop on Exascale Applied Mathematics Challenges and Opportunities (EX14), Chicago, Illinois, USA, July 2014.
92. R. A. Rossi, D.F. Gleich and A.H. Gebremedhin, *Triangle Core Decomposition and Maximum Cliques*, SIAM Workshop on Network Science (NS13), San Diego, CA, July 2013.
93. A.H. Gebremedhin, U. Catalyurek, J. Feo, M. Halappanavar and A. Pothen, *Multithreaded Graph Coloring Algorithms*, The Fifth SIAM Workshop on Combinatorial Scientific Computing (CSC11), Dramstadt, Germany, May 2011.
94. A.H. Gebremedhin, D. Nguyen, A. Tarafdar, and A. Pothen, *Ordering for Coloring and More*, The Fourth SIAM Workshop on Combinatorial Scientific Computing (CSC09), Monterey, CA, 2009.
95. A.H. Gebremedhin, *The Enabling Power of Graph Coloring Algorithms in Automatic Differentiation and Parallel Processing*, In U. Naumann, O. Schenk, H. Simon and S. Toledo (eds), Combinatorial Scientific Computing, Dagstuhl Seminar Proceedings, Number 09061, Dagstuhl, Germany, Feb 2009, URL: <http://drops.dagstuhl.de/opus/volltexte/2009/2093>.

96. A.H. Gebremedhin, A. Pothen, A. Tarafdar, and A. Walther, *Sparse Hessian Computation using Automatic Differentiation*, The Third SIAM Workshop on Combinatorial Scientific Computing (CSC07), Costa Mesa, CA, Feb 2007.

### Theses

97. A.H. Gebremedhin, *Practical Parallel Algorithms for Graph Coloring Problems in Numerical Optimization*, PhD (Dr.scient) thesis, Dept of Informatics, University of Bergen, Feb 2003. Advisor: Fredrik Manne.
98. A.H. Gebremedhin, *Parallel Graph Coloring*, MS (Cand.scient) thesis, Dept of Informatics, University of Bergen, May 1999. Advisor: Fredrik Manne.

### MEDIA

- How Is AI Being Used in Day-to-Day Life? Washington State Steps Ahead, The Bellingham Herald, May 20, 2024.
- Summer workshop brings cybersecurity education and research to Pullman campus, WSU INSIDER, May 13, 2024.
- Cybersecurity education varies widely in US, WSU INSIDER, May 6, 2024.
- Students get real-world learning in cybersecurity, WSU INSIDER, July 12, 2023.
- Degree in cybersecurity gets underway, WSU INSIDER, June 15, 2023.
- CyberCougs place first at regional competition, WSU INSIDER, March 15, 2023.
- Gebremedhin receives prestigious international applied mathematics prize, WSU INSIDER, February 23, 2021.
- SIAM AN21 Prize Spotlight, SIAM News, July 1, 2021.
- Training students at the intersection of power engineering and computer science, WSU INSIDER, November 4, 2021.
- WSU Team To Train Doctoral Students In AI, Data Science To Meet Energy Needs, Northwest Public Broadcasting, November 10, 2021.
- WSU to lead cybersecurity education and research institute, WSU INSIDER, July 16, 2021.
- Determining the role of health care settings in a pandemic, WSU INSIDER, March 18, 2021.
- Connecting AI research, WSU INSIDER, January 30, 2020.
- Understanding bacterial pathogens, WSU INSIDER, March 11, 2019.
- Beating the crowds – with data science, WSU INSIDER, September 14, 2018.
- Transfer students in computer science prove successful, WSU INSIDER, May 11, 2018.
- Software improves ability to catalog bacterial pathogen, WSU INSIDER, June 27, 2016.

## SOFTWARE

- **RepeatAnalyzer**, a software tool for tracking, managing, analyzing and cataloguing short-sequence repeats and genotypes using *Anaplasma marginale* as a model species. Code available at <https://bitbucket.org/repeatgroup/repeatanalyzer>
- **SuperGAN**, a Generative Adversarial Networks-based Python software tool for generating realistic, synthetic, labeled time-series data (in lieu of sensor data). Work-in-progress. Preliminary code available at <https://scads.eecs.wsu.edu/index.php/software/#SGAN>
- **LivarH**, a Live-variables based Hessian computation via Automatic Differentiation (implemented in ADOL-C). Code available at <https://github.com/CSCsw/LivarH>
- **PMC**, a fast, parallel maximum clique finder. Further information available at <https://github.com/ryanrossi/pmc>
- **ColPack**, a C++ library consisting of implementations of algorithms for a variety of graph coloring and related problems enabling scientific computations. Further information available at <http://www.eecs.wsu.edu/~assefaw/software/software.html>.
- ColPack is interfaced with the operator overloading AD tool **ADOL-C** (housed at the University of Paderborn, Germany) and the source-to-source transformation AD tool *ADIC2* (housed at Argonne National Laboratory).
- Implementations of several distributed-memory coloring algorithms developed together with colleagues are included in **Zoltan**, a load balancing toolkit of Sandia National Laboratories.

## RESEARCH FUNDING

- *Collaborative Research: EarthCube Capabilities: ICESpark: An Open-Source Big Data Platform for Science Discoveries in the New Arctic and Beyond*. National Science Foundation, 09/01/2021 – 08/31/2024. Collaborative Research with University of Maryland. WSU Share: \$293,452.  
A. Gebremedhin (Current PI), J. Yu (Former PI).
- *Forecasting and Surveillance of Infectious Threats and Epidemics (ForeSITE)*. Centers for Disease Control (CDC), 09/30/2023 – 09/29/2028. CDC Networks team led by University of Utah. WSU Share: \$4,475,986.  
E. Lofgren (PI), M. Fernandez (Co-I), A. Gebremedhin (Co-I), A. Kalyanaraman (Co-I), E. Schwartz (Co-I), S. Seifert (Co-I), E. Weybright (Co-I).
- *Hierarchical Software Quality Assurance*. Department of Homeland Security, 10/01/2022 – 09/15/2025. Total: \$4.5M. Lead University: Montana State University (MSU) with Cleme Izurieta as PI. WSU Subcontract from MSU: \$861,768.  
A. Gebremedhin (WSU PI), V. Arnaoudova (WSU Co-PI).
- *Interdisciplinary Graduate Training Program in AI and Data Science for Complex Engineering Applications*. Department of Education, Graduate Assistance in Areas of National Need (GAANN) Program, October 2021 – October 2024. Total: \$1.2M.  
A. Gebremedhin (PI), V. Arnaoudova (Co-PI), A. Dubey (Co-PI), N. Schulz (Co-PI).
- *Northwest Virtual Institute for CyberSecurity Education & Research (CySER)*. Department of Defense, 06/17/2021 – 09/15/2024. Total: \$2.3M, WSU share: \$1.5M.  
A. Gebremedhin (PI), B. Van Wie (Co-PI), N. Schulz (Co-PI), S. Adesope (Evaluator).

- *RAPID: Curtailing Nosocomial Amplification of COVID-19*. National Science Foundation, 02/01/2021 – 01/21/2023. Total: \$200K.  
E. Lofgren (PI), A. Gebremedhin (Co-PI) and S. Rhea (Co-PI).
- *PNNL-WSU Distinguished Graduate Research Program*. Awarded to support my PhD student Xu (Tony) Liu. 2018–2021. Total: \$300K.
- *CAREER: Fast and Scalable Combinatorial Algorithms for Data Analytics*. National Science Foundation, 2016–2022. Total: \$520K. A. Gebremedhin (Single PI).
- *US-India Collaborative for Smart Distribution System with Storage (UI-ASSIST)*. Department of Energy, 2017–2022. Lead (Team US): N. Schulz, Co-Lead: A. Srivastava. Total US Share: \$7.5M. Role: WSU Co-PI (joined the project after it was funded).
- *Smart Environments: National Science Foundation Research Experience for Under Graduate Students (REU)*. 2015–2017; 2018–2020; PI: Larry Holder. Role: Senior Personnel.
- *Combinatorial Algorithms to Enable Scientific Computing on Multithreaded Architectures*. Department of Energy, Office of Science, 2013–2015. Total: \$300K.  
A. Pothén (PI) and A. Gebremedhin (co-PI).
- *Combinatorial Algorithms to Enable Derivative Computations on Multicore Architectures*. National Science Foundation, 2012–2015. Total: \$300K.  
A. Pothén (PI) and A. Gebremedhin (co-PI).
- *Combinatorial Scientific Computing and Petascale Simulations (CSCAPES) Institute*. Department of Energy, SciDAC program, 2006–12. Total: \$7M.  
A. Pothén (Lead PI), A. Gebremedhin (co-PI), F. Dobrian (co-PI);  
E. Boman (Sandia PI), K. Devine (co-PI), B. Hendrickson (co-PI);  
P. Hovland (Argonne PI), B. Norris (co-PI), J. Utke (Co-PI); U. Catalyurek (Ohio State PI).
- *Empowering Computational Science and Engineering via Automatic Differentiation*. National Science Foundation, 2008–2011. Total: \$200K.  
A. Pothén (PI) and A. Gebremedhin (co-PI).

## TEACHING

- *Automata and Formal Languages*, CptS 317.  
Spring 2020, 2021, 2022, 2023, 2024. Fall 2024.
- *Data Science*, CptS 475/575.  
Fall 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024.  
(Fall 2015–17 offered under the course number CptS 483).  
Designed course.
- *Elements of Network Science*, CptS 591.  
Spring 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024.  
(Spring 2015–2017 offered under the course number CptS 580).  
Designed course.
- *Data Analytics Capstone*, CptS/STAT 424. Spring 2019.  
Very first offering in the new BS in Data Analytics program.

GRADUATED STUDENTS (4 PHD, 3 MS-THESIS, 1 POSTDOC)

- James Crabb, MS, Graduated Dec 2023.  
Thesis Title: *Critical Review of Cybersecurity Education in the United States*.  
Current Position: Post-doc (50% in the SCADS Lab, 50% in the CySER Institute).
- Xu (Tony) Liu, PhD, Graduated July 2021. Tony was WSU-PNNL Distinguished Graduate Research Program (DGRP) fellow (first co-hort), and was co-advised by Andrew Lumsdaine.  
Thesis Title: *Structure Detection in Graphs and Hypergraphs*  
Current Position: SDE II at AWS (Amazon).
- Yunshu Du, PhD, co-advised with Matt Taylor. Graduated April 2021.  
Thesis Title: *Transfer in Deep Reinforcement Learning: How an Agent Can Leverage Knowledge from Another Agent, a Human, or Itself*.  
Current Position: Data Scientist at Sony AI.
- Sayan Ghosh, PhD, Graduated April 2019.  
Thesis Title: *Supporting Efficient Graph Analytics and Scientific Computation using Asynchronous Distributed-Memory Programming Models*  
Current Position: Computer Scientist at PNNL.
- Ramyar Saeedi, PhD, Graduated July 2018.  
Thesis Title: *Efficient Machine Learning Algorithms for Automatic Reconfiguration of Mobile Health Monitoring Systems*  
Current Position: ML Engineer at Uber.
- Keyvan Sasani, MS, Graduated Dec 2018.  
Thesis Title: *Machine Learning for Predicting Performance of Graph Algorithms with Applications in Graph Databases and Network Similarity*  
Current Position: Data Engineer at Meta.
- Helen Catanese, MS, Graduated May 2017.  
Thesis Title: *RepeatAnalyzer: A Tool for Analyzing and Managing Short-Sequence Repeat Data*. Current Position: Senior Software Engineer at Addium
- Ramyar Saeedi, Postdoc, Sept 2018 – July 2019.  
Accepted position in industry in Aug 2019.

CURRENT GRADUATE STUDENTS (8 PHD; 1 MS; 1 POST-DOC)

- James Crabb, Postdoc, January 2024 – present.  
Topic: Cybersecurity education; Software security.
- Tashi Stirewalt, PhD student, Fall 2023 – present.  
Topic: Cybersecurity and graph algorithms.
- Harrison Greenlee, PhD student, Spring 2023 – present.  
Topic: AI and computational epidemiology.
- Olufunso Oje, PhD student, Fall 2021 – present.  
Topic: Data science and environmental health.
- Jarren Briscoe, PhD student, co-advised with Diane Cook, Fall 2021 – present.  
Topic: Fair AI and Machine Learning.
- James Halvorsen, PhD student, Summer 2020 – present.  
Topic: Cybersecurity and generative ML.

- Shruti Sunil Patil, PhD student, Fall 2020 – present.  
Topic: Network science and bioinformatics.
- Coby Soss, PhD student, Fall 2021 – present.  
Topic: AI and graph algorithms.
- Stephanie Kane, PhD student (Independent Interdisciplinary Program),  
co-advised with Jan Dasgupta, Fall 2022 – present.  
Topic: Data science.
- Deven Biehler, MS student, January 2024 – present.  
Topic: Geospatial data management and analysis.

#### UNDERGRADUATE RESEARCH AND MENTORING

- Current and Past CySER mentees: Freeman Trader, Douglas Takada, Emily West, Fredy Fernandez, Zachary Werle, William Heinecke, Kaitlin White, Cai Haught, Andrew Fritz, Jose Sainz, James Minter.
- Tyler Coffey (WSU, Computer Science), Cybersecurity, Spring 2024.
- Zayn Ahmad Abou-Harb (WSU, Computer Science), Geospatial data management and analysis, Spring 2024.
- Harrison Greenlee (WSU, Computer Science), Open-source Reinforcement Learning Tool for Power Applications, Spring 2022.  
Harrison has joined my group as a PhD student starting Spring 2023.
- Navroop Kaur (WSU, Computer Science), Wearables and Health Applications, Spring 2022.
- Nathan Waltz (WSU, Computer Science), Machine Learning and Cybersecurity, Summer 2021 – present.
- Hillary Zhang (WSU, Computer Science), Cybersecurity, Fall 2021 – Summer 2022.
- Aaron Brookhouse (Michigan State Univ.), NSF REU in Smart Environments, Summer 2020.  
After the completion of the REU project, Aaron has continued to work with me and collaborators in the school of biological sciences on another project.
- Kyla Mallory (WSU, Data Analytics Major), Honors Thesis Advisee, Spring 2019 – Fall 2019.
- Nathaniel Burley (WSU, Math), Deep Learning, Fall 2018–present.
- Zachary Cutler (University of Utah), NSF REU in Smart Environments, Summer 2019.
- Sunny Chiu (Colorado College), NSF REU in Smart Environments, Summer 2018.
- Skyler Norgaard (Kalamazoo College), NSF REU in Smart Environments, Summer 2017.  
Skyler’s summer project led to a conference publication.
- Jonathan Squibb (University of Illinois at Chicago), NSF REU in Smart Environments, Summer 2016.
- Faculty mentor for over 30 (annually) Computer Science majors at EECS, Fall 2014–present.

#### MS NON-THESIS STUDENTS

- Graduated: more than 45 (in the period 2018–2023)
- Current: About 5

PHD THESIS COMMITTEE (CURRENT: 1; GRADUATED: 15)

- Daniel Glover, Power Engineering, Advisor: Anamika Dubey  
Prelim Passed in Fall 2023
- Arman Ahmed, Power Engineering, Advisor: Anurag Srivastava  
Final defense Passed in Fall 2022
- Lusha Wang, Power Engineering, Advisors: Noel Schulz and Anamika Dubey  
Final defense Passed in Jan 2022
- Niloy Patari, Power Engineering, Advisor: Anurag Srivastava  
Final defense passed in Fall 2021
- Sumit Purohit, Graph Mining, Advisor: Larry Holder  
Final defense passed in Spring 2021
- Peng Lin, Graph Databases, Advisor: Yinghui Wu  
Final defense passed in Fall 2020
- Qi Song, Graph Mining, Advisor: Yinghui Wu  
Final defense passed in Fall 2020
- Ehdieh Khaledian, Bioinformatics, Advisor: Shira Broschat  
Final defense passed in Fall 2020
- Mohammad Hossein Namaki, Graph Databases, Advisor: Yinghui Wu  
Final defense passed in Fall 2019
- Abu Chowdhury, Anti Microbial Resistance, Advisor: Shira Broschat  
Final defense passed in Fall 2019
- Zhaodong Wang, Transfer Learning, Advisor: Matthew Taylor  
Final defense passed in Fall 2019
- Niloofar Hezarjaribi, Diet monitoring, Advisor: Hassan Ghasemzadeh  
Final defense passed in Fall 2019
- Daniel Olivares, Human-Computer Interaction, Advisor: Chris Hundhausen  
Final defense passed in Spring 2019
- Seyed Ali Rokni, Embedded and Pervasive Computing, Advisor: Hassan Ghasemzadeh  
Final defense passed in Summer 2018
- Paola G. Pesantez Cabrera, Graph Algorithms, Advisor: Ananth Kalyanaraman  
Final defense passed in Spring 2018
- Hao Lu, Parallel Computing, Advisor: Ananth Kalyanaraman.  
Final defense passed in Spring 2017

MS THESIS COMMITTEE (GRADUATED; 6)

- Mohammed Mustafa Hussain, Power Engineering, Advisor: Anurag Srivastava.  
Graduated in Summer 2021.
- Zhilla Esna Ashari Esfahani, Active Learning, Advisor: Hassan Ghasemzadeh.  
Graduated in Fall 2019.
- Marjan Nourollahi Darabad, Embedded Systems, Advisor: Hassan Ghasemzadeh.  
Graduated in Summer 2019.

- Nathan Wendt, Social Network Analysis, Advisor: Sandip Roy. Graduated in Spring 2019.
- Gabriel De la cruz, Robotics, Advisor: Matt Taylor. Graduated in Spring 2019.
- Viresh Duvvuri, Robotics, Advisor: Matt Taylor. Graduated in Summer 2017.

#### UNIVERSITY SERVICE (AT WSU)

##### **School Level**

- Lead, Cybersecurity Curriculum Committee, 2022–present.
- Lead, EECS Undergrad Recruiting Committee, 2019–2023.
- Member, Computer Sciences Curriculum Committee, 2023–present.
- Member, EECS Assessment Committee, 2023–present.
- Member, EECS Graduate Studies Committee (GSC), 2019–present.
- Member, CS Faculty Search Committee, EECS, Pullman campus, 2015-16, 2021-2024.
- Member, EE Faculty Search Committee, EECS, Pullman campus, 2021-2023.
- Co-Chair, Cybersecurity Faculty Search, Tri-Cities campus, 2023-2024.
- Member, Mentoring Committee of several junior faculty, EECS.

##### **College Level**

- Faculty Advisor, Cyber Security Group (student club), 2021–present.
- Faculty Advisor, National Society of Black Engineers (NSBE) WSU Chapter, 2015–present.
- Member, VCEA Faculty Committee for Undergrad Recruitment, 2020–2023.
- Member, Governance Committee of the Voiland College of Engineering and Architecture HPC cluster Aeolus, 2016–2020.

##### **University Level**

- Lead, AI Research Working Group, Feb 2024 – present.
- Coordinator, WSU Cybersecurity initiative, 2022 – present.
- Member, Faculty Senate Academic Affairs Committee (AAC), 2017–2020.
- Member, Committee for PhD in Data Science/Data Analytics, 2021 – 2023.
- Point-of-Contact, WSU AI Research, 2019 – 2022.
- Member, Data Analytics Faculty Advisory Board, 2020 – 2022.
- Co-organizer, Distinguished Seminar Series in Data Science, 2015–2016.
- Faculty Mentor, PNW Louis Stokes Alliance for Minority Participation (LSAMP) at WSU, 2015–present.



## PROFESSIONAL SERVICE

- **AI Expo at NCESD STEM Summit 2021**

Moderated a panel discussion titled *AI Jobs of the Future: A conversation about emerging AI jobs and preparing the next generation for these roles*. Video recordings of the panel discussion is available at: <https://youtu.be/29JNBCKFvvY>

- **Virtual Summit on AI**

Organizer and moderator, Advancing AI at WSU: a Virtual AI Summit, held as a featured event at the 2020 WSU Research Week, October 14, 2020. Event info including videos of presentations available at <https://research.wsu.edu/ai/advancing-ai-wsu/>.

- **Proposal Review/Panel Service**

- Panelist, U.S. National Science Foundation: 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015. (Multiple panels in some years)
- Panelist/Reviewer, U.S. Department of Energy: 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2009.  
(Multiple panels in some years)
- Reviewer, *Netherland's Organization for Scientific Research*: 2014, 2008.
- Reviewer, *The French National Research Agency*: 2010.

- **Select Recent Conference Program Committee Service**

- International European Conference on Parallel and Distributed Computing (EuroPar 2024)
- 2023 SIAG/ACDA Early Career Prize (Prize Selection Committee Member)
- ACM International Conference on Web Search and Data Mining (WSDM) (2023)
- AAAI 2022 (Senior Program Committee)
- The WEB Conference/WWW (2023, 2022, 2021, 2020, 2019, 2018)
- SIAM Conf. on Applied and Computational Discrete Algorithms (ACDA) (2023, 2021)
- SIAM Data Mining (2023, 2021, 2020, 2019)
- NeurIPS 2021 Workshop on Differentiable Programming (Organizing Committee)
- SIAM Workshop on Combinatorial Scientific Computing (2020, 2018, 2016 (Co-Chair))
- IEEE Int. Parallel and Distributed Processing Symposium (IPDPS) (2023, 2018, 2017, 2015)
- IEEE BigData (2018, 2017, 2016)
- IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC) (2018, 2017)
- IEEE International Conference on Machine Learning and Applications (ICMLA) (2018)
- ACM Conference on Bioinformatics, Computational Biology and Health Informatics (ACM BCB) (2017)

- **Select Journal Paper Review** (numerous times for most journals)

- *ACM Transactions on Parallel Computing*.
- *ACM Journal on Experimental Algorithmics*.
- *ACM Transactions on Mathematical Software*.
- *IEEE Transactions on Parallel and Distributed Systems*.
- *IEEE Transactions on Knowledge and Data Engineering*.

- *IEEE Transactions on Power Systems.*
- *IEEE Transactions on Multi-scale Computing Systems.*
- *SIAM Journal on Scientific Computing.*
- *SIAM Journal on Matrix Analysis.*
- *Discrete Applied Math.*
- *PLOS One.*
- *PLOS Computational Biology.*
- *Viruses.*
- *Journal of Parallel and Distributed Computing (JPDC).*
- *The Very Large Databases (VLDB) Journal.*
- *Parallel Computing.*
- *Information Sciences.*
- *Transaction of Combinatorics.*

- **Book Review**

- Chapman & Hall/CRC Press, Statistical Sciences Series, 2017
- Springer Nature, *Advanced Information and Knowledge Processing Series*, 2016
- SIAM, *Frontiers in Applied Mathematics*, 2008

#### PROFESSIONAL MEMBERSHIP

- Senior Member of IEEE
- Member of ACM
- Member of the Society for Industrial and Applied Mathematics (SIAM)
- Member of the SIAM activity groups on: (1) Supercomputing; (2) Applied and Computational Discrete Algorithms; and (3) Data Science.