

EDUCATION

- Ph.D. in Electrical and Computer Engineering** December, 2016
Mississippi State University, Mississippi State, MS
- B.Tech in Electronics and Communication Engineering** May, 2010
Amrita Vishwa Vidyapeetam, Bangalore, Karnataka, India

EXPERIENCE

- Assistant Professor** August, 2017 – Present
Department of Computer Science
University of Alabama in Huntsville, AL
- Director, Big Data Analytics Lab** August, 2017 – Present
Department of Computer Science
University of Alabama in Huntsville, AL
- Adjunct Faculty, Computational Biology** January, 2019 – Present
Department of Biotechnology Science & Engineering
University of Alabama in Huntsville, AL

AFFILIATION

- National Center for Women & Information Technology (NCWIT), *Member* 2019-Present
- Association of Computing Machinery (ACM), *Member* 2018-Present
- Association of Computing Machinery-Women (ACM-W), *Member* 2018-Present
- American Geophysical Union (AGU), *Member* 2017-Present
- IEEE Geoscience and Remote Sensing Society (GRSS), *Member* 2015-Present
- IEEE Signal Processing Society (SPS), *Member* 2014-Present
- IEEE-Eta Kappa Nu (HKN), *Member* 2014-Present
- IEEE Women in Engineering (WIE), *Member* 2014-Present
- Women in Stem Engineering-(WISE), *Member* 2014-Present
- IEEE Communication Society (ComSoc), *Member* 2010-Present

AWARDS & HONORS

1. **Research Horizon award**, 3rd place in College of Science graduate poster category, R.G. Bangani, and V. Menon, “A Personalized stress Monitoring AI System for Healthcare Workers,” *Annual Research Horizons Day*, University of Alabama in Huntsville, 2021.
2. **Early Career Fellowship**, National Academy of Sciences and Engineering and Medicine (NASEEM)—Gulf Research Program (GRP), 2020.
3. **New Faculty Research (NFR) award**, “Efficient Knowledge Discovery and Big Data Analytics for Data- Driven Disease Diagnoses in Healthcare Applications”, University of Alabama in Huntsville (UAH), 2018.
4. **Alabama Science and Technology Open House award**, 2nd place in graduate poster category, S. N. Reddy and V. Menon, “Comprehensive Parking Study at the University of Alabama in Huntsville using Airborne sensors,” *2018 Science and Technology Open House: Showcasing STEM Activities Across Alabama Institutions*, Tuskegee University, 2018

5. **Research Horizon award**, 1st place in College of Science graduate poster category, S. N. Reddy, and **V. Menon**, “InstaPark-Smart Parking Solution,” 4th annual *Research Horizons Day*, University of Alabama in Huntsville, 2018.
6. **Certificate of Recognition** by *Journal of Applied Remote Sensing (JARS)* for service as reviewer, 2018.
7. **Outstanding Graduate Woman** award, President’s Commission on the Status of Women (PCSW), Mississippi State University (MSU), 2016.
8. **Student Hall of Fame** award, Bagley College of Engineering (BCoE), MSU, 2016.
9. **Graduate School Hall of Fame and Outstanding Graduate Student** award, Graduate school, MSU, 2016.
10. **Spirit of State** award, MSU, 2015.
11. **Top 10%** award, for conference paper “Hyperspectral Classification Using a Composite Kernel Driven by Nearest-Neighbor Spatial Features”, *IEEE International Conference on Image Processing (ICIP)*, 2015.
12. **Certificate of recognition**, finalist in IEEE-Ethics competition, IEEE Southeast Con, 2015.
13. **President**, IEEE- Eta Kappa Nu (HKN) honor society, MSU, 2014-2015
14. **Vice President**, IEEE- Eta Kappa Nu (HKN) honor society, MSU, 2016
15. **Outstanding Chapter** award, IEEE-HKN-MSU (Gamma Omega) Chapter, 2014, 2015, 2016
16. **Graduate School Ambassador**, BCoE, MSU, 2014-2016
17. **President**, IEEE- Women in Engineering (WIE) affinity group, MSU, 2014-2016
18. **Graduate Student Ambassador**, Department of Electrical and Computer Engineering (ECE), MSU, 2013-2016
19. **Recognition**, volunteered in a fundraiser event, Starkville Multi Cultural Lions club, Starkville eye hospital, St. Jude Children’s hospital, 2012.
20. **Silver medal**, Academic Excellence Award, B.Tech., Amrita Vishwa Vidyapeetam, 2010

RESEARCH INTERESTS

Big Data Analytics, Data Science, Cyber Security, Remote Sensing, Hyperspectral classification, Deep learning, interpretable Machine learning, explainable AI, Computational biology, human machine interfaces, AI automation and trust factors.

PUBLICATIONS

Peer-reviewed Journal Articles

■ *Under Review*

1. V. S. Akondi, **V. Menon**, J. Whittle, J. Baudry, “Novel Big Data-driven Machine Learning models for Conformational Selection in Protein-Ligand Interactions”, *PLOS ONE*, 2021.
2. **V. Menon**, “Spatial-Spectral Information Fusion Using Randomized Non Negative Matrix Factorization For Hyperspectral Image Classification,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)*, 2020.

■ *In Preparation*

1. B. Praveen, and **V. Menon**, “Deep Learning-based Spectral- Spatial Attention Models for Hyperspectral Data Analysis,” *IEEE Transactions in Geoscience and Remote Sensing (TGARS)*, 2021.
2. B R.G. Bangani, **V. Menon** and E. Jovanov, “Robust Wearable-AI System for Personalized Stress Detection and Monitoring in Nurses”, *IEEE Journal of Translational Engineering in Health and Medicine (JTEHM)*, 2021.

3. K. Weger, and **V. Menon**, "Towards a Big Data Analytics-driven Intra Team Situation Awareness," *IEEE Transactions on Human-Machine Systems (HMS)*, 2021.
4. **V. Menon**, "Graph-based Spatial-Spectral Information Extraction Using Random Projection for Dimensionality Reduction of Hyperspectral Imagery," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)*, 2021.
5. S. Gupta, C. Preacher, **V. Menon**, J. Baudry, and J. Whittle, "Big Data Analytics for Efficient Protein Conformation Selection", *PLOS ONE*, 2021, *in preparation*.
6. **V. Menon** and M. Doustmohammadi, "A Comprehensive Case Study on Prediction of Crash Delays in AL counties", *IEEE Transactions on Intelligent Transportation Systems*, 2021, *in preparation*.
7. T. Warren, and **V. Menon**, "Virtual or Real: A Survey on Performance of Deep Learning techniques for Unity-based Environment Image Detection ", *IEEE Transactions on Games*, 2021, *in preparation*.

■ *Published*

1. B. Praveen and **V. Menon**, "Study of Spatial-Spectral Feature Extraction Frameworks With 3-D Convolutional Neural Network for Robust Hyperspectral Imagery Classification," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 14, pp. 1717-1727, 2021.
2. **V. Menon**, S. Yarahmadian, and V. Rezaia, "Novel EM based ML Kalman Estimation Framework for Superresolution of Stochastic Three-States Microtubule Signal," *BMC Systems Biology*, 2018, vol. 12, no. 6, pp.112-131.
3. **V. Menon**, Q. Du, and J. E. Fowler, "Random Hadamard Projections For Hyperspectral Unmixing," *IEEE Geoscience and Remote Sensing Letters*, vol. 14, no. 3, pp. 419-423, Mar. 2017.
4. **V. Menon**, Q. Du, and J. E. Fowler, "Fast SVD with Random Hadamard Projection for Hyperspectral Dimensionality Reduction," *IEEE Geoscience and Remote Sensing Letters*, vol. 13, no. 9, pp. 1275-1279, Sept. 2016.
5. J. Wen, J. E. Fowler, M. He, Y. Zhao, C. Deng, and **V. Menon**, "Orthogonal Nonnegative Matrix Factorization Combining Multiple Features for Spectral-Spatial Dimensionality Reduction of Hyperspectral Imagery," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 54, no. 7, pp. 4272-4286, July 2016.
6. M. Mahrooghi, S. Yarahmadian, **V. Menon**, V. Rezaia, and J. A. Tuszynski, "The use of Compressive Sensing and Peak Detection in the Reconstruction of Microtubules Length Time Series in the Process of Dynamic Instability," in *Computers in biology and medicine*, Elsevier, 65, 25-33, Oct. 2015.

Peer-reviewed Conference papers

■ *Under Review*

1. R.G. Bangani, **V. Menon** and E. Jovanov, "Personalized Stress Monitoring AI System For Healthcare Workers", *12th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB)*, 2021.

■ *In Preparation*

1. T. Warren, and **V. Menon**, "HI-GAS: Human Intent-Guided Autonomous Systems for a Virtual Drone-Assisted Combat Situation", *IEEE International Conference on Big Data*, 2021, *in preparation*.

■ *Published*

1. B. Praveen, and **V. Menon**, "A Bi-Directional Deep Learning Based Spectral Attention Mechanism For Hyperspectral Data Analysis", *IEEE International Conference on Image Processing (ICIP)*, 2021, accepted.

2. BMS. B. Talukder, **V. Menon**, B. Ray, T. Neal, and M.T. Rahman, "Towards the Avoidance of Counterfeit Memory: Identifying the DRAM Origin", in Proceedings of 2020 IEEE International Symposium on Hardware Oriented Security and Trust (HOST), pp. 111-121, Dec 2020.
3. T. Warren, and **V. Menon**, "Informed Trading Support for the Amateur Investor on the New York Stock Exchange", in Proceedings of IEEE International Conference on Big Data, pp. 2948-2955, Dec 2019.
4. B. Praveen, and **V. Menon**, "Novel Deep-Learning-Based Spatial-Spectral Feature Extraction For Hyperspectral Remote Sensing Applications", in Proceedings of IEEE International Conference on Big Data, pp. 5444-5452, Dec 2019.
5. V. S. Akondi, **V. Menon**, J. Whittle, and J. Baudry, "Novel K-Means Clustering-based Undersampling and Feature Selection for Drug Discovery Applications", in Proceedings of IEEE International Conference of Bioinformatics and Biomedicine (BIBM), pp. 2771-2778, Nov 2019.
6. **V. Menon**, and S. Yarahmadian, "Wavelet-Based Compression and Estimation of the N-State Stochastic Microtubule Signal," in Proceedings of IEEE International Conference on Bioinformatics and Biomedicine (BIBM), pp. 852-858, Nov 2019.
7. **V. Menon**, "Randomized Locality-Preserving Discriminant Analysis for Dimensionality Reduction and Hyperspectral Image Classification," in Proceedings of IEEE International Geoscience and Remote Sensing Symposium (IGARSS), pp. 3340-3343, July 2019.
8. S. N. R. Mettupally, and **V. Menon**, "A Smart Eco-System for Parking Detection Using Deep Learning and Big Data Analytics," in Proceedings of the IEEE Southeast Con, pp. 1-4, April 2019.
9. K. Foster, and **V. Menon**, "A Study of Spatial-Spectral Information Fusion Methods in the Artificial Neural Network Paradigm for Hyperspectral Data Analysis in Swarm Robotics Applications," in Proceedings of the IEEE Southeast Con, pp. 1-8, April 2019.
10. **V. Menon**, and Q. Du, "Randomized Non Negative Matrix Factorization For Hyperspectral Image Classification," in Proceedings of the 9th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS), 2018.
11. **V. Menon** and S. Yarahmadian, "Wavelet Based Compressed Sensing Sampling and Estimation of N-States Random Evolution Model Parameters in Microtubule Signal," in Proceedings of IEEE International Conference of Bioinformatics and Biomedicine (BIBM), pp. 2009-2016, Dec. 2018.
12. R. Das, **V. Menon**, and T. Morris, "On the Edge Realtime Intrusion Prevention System for DoS Attack," in Proceedings of 5th International Symposium for ICS & SCADA Cyber Security Research (ICS-CSR), August 2018. DOI: 10.14236/ewic/ICS2018.10
13. **V. Menon**, Q. Du, and S. Christopher, "Improved Random Projection With K-Means Clustering For Hyperspectral Image Classification," in Proceedings of the IEEE International Geoscience and Remote Sensing Symposium (IGARSS), pp. 4768-4771, July 2018.
14. **V. Menon**, S. Yarahmadian, and V. Rezaia, "Superresolution and EM based ML Kalman Estimation of the Stochastic Microtubule Signal Modeled as Three States Random Evolution," in proceedings of IEEE International Conference on Bioinformatics and Biomedicine (BIBM), pp. 686-693, Nov 2017.
15. **V. Menon**, Q. Du, and J. E. Fowler, "Random Projection Based Nonnegative Least Squares for Hyperspectral Image Unmixing," in Proceedings of the 8th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Los Angeles, CA, August, 2016.
16. **V. Menon**, Q. Du, and J. E. Fowler, "Hadamard-Walsh Random Projection for Hyperspectral Image Classification," in Proceedings of the International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, pp. 5141-5144, July 2016.
17. S. Yarahmadian, **V. Menon**, and V. Rezaia, "On using Compressed Sensing and Peak Detection Method for the Dynamic Instability Parameters Estimation for Microtubules Modeled in Three States," in Proceedings of Bioinformatics and Biomedicine (BIBM), 2015 IEEE International Conference on, pp. 417-420, Nov. 2015.

18. **V. Menon**, S. Prasad, and J. E. Fowler, "Hyperspectral Classification using a Composite Kernel Driven by Nearest-Neighbor Spatial Features," in *Proceedings of 2015 IEEE International Conference on Image Processing (ICIP)*, vol., no., pp.2100-2104, 27-30 , Sept. 2015.

POSTER PRESENTATIONS

- **V. Menon**, "Randomized Locality-Preserving Discriminant Analysis for Dimensionality Reduction and Hyperspectral Image Classification," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, July 2019.
- **V. Menon**, S. Christopher, "Novel Random Projection-based Dimensionality Reduction methods as a Foundation for Scalable and Efficient Big Data Analytics in Geoscience Applications," in the *100th American Geophysical Union (AGU) Fall meeting*, Dec 2018.
- S. Nikhil Reddy, and **V. Menon**, "Comprehensive Parking Study at the University of Alabama in Huntsville using Airborne sensors", *Science and Technology Open House: Showcasing STEM Activities Across Alabama Institutions*, Tuskegee University, 2018.
- S. Nikhil Reddy, and **V. Menon**, "InstaPark-Smart Parking Solution", *4th annual Research Horizons Day, College of Science, University of Alabama in Huntsville*, 2018.

OTHER PRESENTATIONS

- "Randomized Locality-Preserving Discriminant Analysis for Dimensionality Reduction and Hyperspectral Image Classification," *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, 2019.
- "Improved Random Projection With K-Means Clustering For Hyperspectral Image Classification," *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, 2018.
- "Superresolution and EM based ML Kalman Estimation of the Stochastic Microtubule Signal Modeled as Three States Random Evolution", in *IEEE Bioinformatics and Biomedicine (BIBM)*, 2017
- "Random Projection Based Nonnegative Least Squares for Hyperspectral Image Unmixing", in the 8th *Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, 2016
- "Hyperspectral Classification using a Composite Kernel Driven by Nearest-Neighbor Spatial Features", in *IEEE International Conference on Image Processing (ICIP)*, 2015
- "Using Compressed Sensing and Peak Detection Method for Dynamic Instability Parameters Estimation for Microtubules", *Three minute thesis Presentation*, 2014.
- "Role of image processing in remote sensing (hyperspectral classification)", *Remote sensing seminar*, 2013.

INVITED TALKS

- "Advanced Feature Selection: Can We Predict a Dictionary of Bio-physical Characteristics of a Potential Drug Candidate to Hasten Drug Discovery Process," *COUPLED 2021: Physics Informed Machine Learning for Scientific Computing*, Virtual.
- "Role of Machine Learning in Optimizing Protein Conformation Selection for Drug Discovery Applications," *2020 annual meeting of the Society for Industrial and Applied Mathematics (SIAM)*, Virtual, Toronto, Canada.
- "Study of Drug-Target Interaction using Novel Big Data Techniques," *2020 annual meeting of the Society for Industrial and Applied Mathematics (SIAM)*, Virtual, Toronto, Canada.
- "Data Science: Role of Big Data Analytics in Expediting Drug Discovery Applications", *WeRockIT conference*, Huntsville, 2020

- “Successful Transformation from Example to Role Model”, *Grace Hopper Conference (GHC)*, Orlando, 2019.
- “Data Science: Transition from Education to Real-World Applications”, WeRockIT conference, Huntsville, 2019
- “Implications of Big Data Analytics in Real-World Applications”, *Honors College, University of Alabama in Huntsville*, 2019.
- “How to Survive and Thrive When You Are the Only Woman-Mentoring Circles”, *Grace Hopper Conference (GHC)*, Houston, 2018.
- “Role of Mentorship in Navigating Towards Your Dream”, *Coffee Chat Presentation, College of Science, University of Alabama in Huntsville*, 2017.
- “Diversity as an Essential Component for STEM Success”, *President’s Commission on the Status of Women (PCSW), Mississippi State University*, 2016.

FINANCIAL SUPPORT/ GRANTS

1. **Early Career Award**, National Academy of Sciences and Engineering and Medicine (NASEEM)—Gulf Research Program (GRP), 2020. Amount: \$76,000, Duration: 09/01/2020-08/31/2022.
2. **New Faculty Research (NFR) award**, “Efficient Knowledge Discovery and Big Data Analytics for Data-Driven Disease Diagnoses in Healthcare Applications,” University of Alabama in Huntsville (UAH), 2018. Amount: \$9,452, Duration: 12/14/2018-12/14/2019.

SYNERGISTIC ACTIVITIES

1. **Sponsor “Big Data Analytics” research via Big Data Analytics (BDA) lab:** BDA lab promotes mainstream research for multidisciplinary areas of remote sensing, computational biology, and cybersecurity. It also serves to stimulate student enrollment in the UAH.
2. **Professional and educational service:** Serve as reviewer for DOE panel, BMC Systems Biology, IEEE Transactions on Geoscience and Remote Sensing (TGARS), IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), IEEE Geoscience and Remote Sensing Letters (IGRSL), and other notable journals and conferences.
Other service: Invited speaker for WeRockIT conference (2020, 2019), Grace Hopper Conference (GHC) (2018, 2019). Speaker selection committee for Data Science track in WeRockIT conference 2020. Served in DOE reviewer panel (2019).
3. **Promote graduate women enrollment and diversity through UAH-ACM chapter:** Serve as faculty advisor for UAH-ACM and ACM-Women (W) chapters’ (2018-present) to sponsor activities that promote student professional development and mentoring, leadership, STEM research, and enrollment of women and minorities in computer science (CS) at the UAH. **Other service:** Serve as NCWIT-UAH alliance liaison (2019-present) to further participation of women in technology.
4. **Stimulate scientific innovation:** Foster research and innovation via partnership with local industrial experts like Hudson Alpha, Dynetics, and Raytheon to broaden the scope of Big Data research through collaborative proposals, publications and product development.
5. **Community service and outreach activities:** Served as a Judge at the Alabama Science and Engineering Fair (April, 2018). Provide outreach through UAH-ACM chapter activities to raise awareness about STEM and CS programming through partnership with K-12 schools. Volunteer in community activities sponsored by Huntsville young professional (HYP) group such as Buddy Walk for down syndrome (2019), peer mentoring, Alabama trail care and other activities. Volunteered for a charity event by AshaKiran-A Ray of Hope organization (2019)- which is a non-profit organization that offers assistance to individuals who experiencing crises such as domestic violence, sexual assault and developmental

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disabilities to diverse communities throughout Alabama. Participated as a mentor for AUM Foundation charity event, that sponsored under-resourced female high school students in their senior year to allow them to gain experience and insight into their career path, and building life skills to aid them in breaking generational poverty and prepare them for the workforce.

PROFESSIONAL ACTIVITIES AND OUTREACH

Journal Reviewer

- IEEE Transactions on Geoscience and Remote Sensing (TGARS)
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)
- IEEE Geoscience and Remote Sensing Letters (IGRSL)
- Journal of Applied Remote Sensing (JARS)
- European Journal of Remote Sensing (EJRS)
- International Journal of Remote Sensing (IJRS)
- Journal of real-time image processing (JRTIP)
- IEEE Transactions on Multimedia (TMM)
- Artificial Intelligence Review (AIRE)
- BMC Systems Biology
- PLOS One
- Biochimica et Biophysica Acta (BBA)

Conference Reviewer

- IEEE International Conference on Image Processing (ICIP).
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP).
- IEEE Global Conference on Signal and Information Processing (GlobalSIP).

TEACHING EXPERIENCE

Courses Taught

@University of Alabama in Huntsville

- | | |
|--|-------------------------------|
| 1. CS309: Computer Org & Switching Theory | Spring 2021, 2020, 2019 |
| 2. CS413: Intro to Computer Architecture | Spring 2021, 2020, 2019, 2018 |
| 3. CS413: Intro to Computer Architecture | Fall 2020, 2019, 2018 |
| 4. CS488: Intro to Big Data Computing | Fall 2020, 2019 |
| 5. CS588: Intro to Big Data Computing | Fall 2020, 2019 |
| 6. CS696-16: Special Topics: Big Data Analytics | Fall 2017, 2018 |
| 7. CS103: Intro to C Programming | Summer 2017 |
| 8. CS495-07: Special Topics: Intro to Interpretable Machine learning | Spring 2020, Fall 2020 |
| 9. CS795-07: Special Topics: Advanced Interpretable Machine learning | Summer 2020, Fall 2020 |
| 10. Hon-499: Honor's thesis | Spring 2021 |

ADVISEES

VINEETHA MENON

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Doctoral advisees

1. Bishwas Praveen Spring 2020– Present
2. Shivangi Gupta Spring 2020– Present
3. Thomas de wit Warren Spring 2019– Present

Masters advisees

1. Joseph Schwalb Spring 2021– Present

Past Masters advisees

1. Bishwas Praveen Spring 2018-Fall 2019
Thesis title- “Deep Learning-based Spatial-Spectral Feature Extraction for Hyperspectral Data Analysis Applications”
2. Vishnu Sripriya Akondi Spring 2018- Fall 2019
Thesis title- “Novel Big Data Analytics for Study of Drug-Target Discovery Application”
3. Raina Ghanshyam Bangani Fall 2019- Spring 2021
Thesis title- “A Personalized Stress Monitoring AI System”

Undergraduate advisees

1. Trystan May Spring 2021– Present
2. Eric Sung Spring 2021– Present
3. Nathaniel Solomon Fall 2020– Present
4. Corinne Preacher Spring 2019– Fall 2020
5. Anushka Bhattacharjee Fall 2019– Present
6. (Lucas) Nhu Nguyen Minh Fall 2019– Present

Masters Committee Participation

1. Arun John Fall 2020– Present
2. Md Imtiaz Rashid Summer 2020
3. Diwas Sharma Fall 2018
4. Iksha Gurung Fall 2017

Doctorate Committee Participation

1. Andrew Davis Fall 2020– Present
2. Femi Williams Fall 2020– Present
3. Reetu Hooda Spring 2019– Present
4. Kevin Foster Spring 2018– Present