

Vibhuti Gupta, Ph.D.
Meharry Medical College
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Current Position(s)

Assistant Professor of Computer Science & Data Science
School of Applied Computational Sciences
Meharry Medical College
Nashville, TN

Education

Postdoctoral Fellow, University of Michigan, Ann Arbor, MI, USA	2020 - 2021
Ph.D. in Computer Science, Texas Tech University, Lubbock, TX, USA	2015 - 2020
M.Tech. in Computer Science, SRM University, Chennai, TN, India	2010 - 2012
B.Tech. in Computer Science, BIET, Jhansi, UP, India	2006 - 2010

Academic Appointments

Assistant Professor of Computer Science & Data Science School of Applied Computational Sciences Meharry Medical College Nashville, TN	2021 - Present
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Instructor Department of Computer Science Texas Tech University Lubbock, TX	2019 - 2019
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Research Assistant Department of Computer Science Texas Tech University Lubbock, TX	2015 - 2019
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Research Assistant Institute for Measurement, Methodology, Analysis & Policy Texas Tech University Lubbock, TX	2015 - 2019
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Professional Positions and Experience

Postdoctoral Research Fellow Department of Pediatrics, Hematology/Oncology University of Michigan Ann Arbor, MI	2020 - 2021
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System Engineer Tata Consultancy Services Noida, UP, India	2012 - 2015
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**Professional Development
Workshops/Training**

	Date
1. NIH Grant writing workshop	Mar 1 st , 2021
2. Training on Conflict of Interest, HIPAA Awareness	Feb 22 nd , 2021
3. NSF Workshop on Predictive Intelligence for Pandemic Prevention	Feb 16 th – Feb 17 th , 2021
4. MIDAS Data Science for Biomedical Scientists: Workshop	Oct 27 th , 2020
5. Research Study Coordinator Training	Jan 31 st , 2020
6. Research Computing on the Great Lakes Cluster	Jan 29 th , 2020
7. Michigan Medicine Compliance Training	Jan 21 st , 2020
8. Human Subject Research Protections PEERRS Training	Jan 9 th , 2020
9. SciVal Workshop	Oct 31 st – Nov 1 st , 2019
10. Resume & Cover Letter Workshop	July 17 th , 2019
11. XSEDE HPC Workshop :MPI	May 6 th – 7 th , 2019
12. XSEDE Workshop: Big Data	Dec 4 th – 5 th , 2018
13. XSEDE HPC Workshop: GPU Programming	Nov 6 th , 2018
14. Graduate Student Writing Workshop	Oct 31 st 2018
15. Research Statement Workshop	July 27 th , 2017
16. Principles of Academic Writing Workshop	Feb 1 st , 2017
17. HPC Workflows Workshop	Aug 9 th -10 th , 2016
18. HR Compliance and Title IX Training	April 15 th , 2016
19. Cybersecurity Workshop	April 5 th , 2016
20. Literature Review Workshop	Nov 5 th 2015
21. Grant Writing Seminar & Responsible Conduct of Research Workshop	Sep 14 th – 15 th , 2015
22. CITI Training	July 2015
23. National level Workshop on Research Challenges in Soft Computing	Dec 16 th – 17 th , 2011
24. Network Management Workshop	June 2009

10. Summer Training: Java

June 3rd – July 13th , 2008

Professional Memberships and Activities

Institute of Electrical and Electronics Engineers (IEEE)	2015- Present
Association for Computing Machinery (ACM)	2015- Present

Educational Activities

- Taught course focused on MATLAB and R introductory programming and their usage for data analytics using various statistical and Machine Learning Techniques.
- Designed course curriculum, course lectures, assignments, assessments, and projects for the course.
- Graded assessments and conducted interactive discussion sessions.

Research Experience

University of Michigan, Ann Arbor, MI, USA Jan 2020 – Present

Postdoctoral Research Fellow, Michigan Medicine,
Department of Pediatrics, Hematology/Oncology

- Worked in an interdisciplinary team of biostatisticians, biomedical researchers, and doctors to analyze clinical data streams and developing AI-based tools for clinical decision making.
- Involved in analyzing high-volume wearable sensor, molecular biomarkers, and longitudinal health outcomes data, to identify non-invasive biomarkers for early detection of pre- and post-transplant complications in transplant patients.
- Developed novel preprocessing and machine learning pipelines for efficient analytics of collected medical data.

Texas Tech University, Lubbock, TX, USA

Sep 2015 – Dec 2019

Doctoral Research,

Department of Computer Science

- Developed novel preprocessing pipelines for efficient analytics of Big data streams leveraging artificial intelligence techniques.
- Developed AI-based hybrid preprocessing pipeline for tweet analytics, designed online preprocessing pipeline to apply it in real-time tweet streams, and combined both the pipelines effectively in a comprehensive framework.
- Developed preprocessing pipeline for adaptive and scalable normalization of sensor data streams.

Texas Tech University, Lubbock, TX, USA

Sep 2015 – Dec 2019

Graduate Research Assistant,

Institute for Measurement, Methodology, Analysis & Policy (IMMAP)

- Developed statistical tools and Softwares used extensively in the field of Educational Psychology.
- Developed preprocessing mechanism and built predictive models to analyze unstructured prisoner's dataset for predicting recidivism.
- Involved in developing applications for efficient analytics of patient reported outcomes.

Honors and Awards

Graduate School Conference Travel award, Texas Tech University	2017- 2018
Research assistantship, IMMAP, Texas Tech University	2015 - 2019
Graduate School Fellowship, Texas Tech University	2015
Summer Research Departmental Scholarship, Texas Tech University	2015
President award for securing First rank in Masters, SRM University	2012
Paryavaran Ratan award, All India second rank in exam conducted by Indian centre for wildlife and environmental studies in south Asia region	2003
2nd Place, National Leprosy prevention Quiz	2002

Grants and Contract Awards

Topic	Source	Role	Year	Status
MRI: Acquisition of a High-Performance Computer System to Support Research and Training in Computational Biology and Data Science at Meharry Medical College	NSF	Senior Personnel	2021	Pending

Publications

Peer-reviewed Journal Publications

1. **Gupta, V.**, Raj, M., Hoodin, F., Lilian, Y., Braun, T. & Choi, S. W. Electronic Health Record Portal Use by Family Caregivers of patients undergoing Hematopoietic Cell Transplantation: A National Survey Study, *JMIR Cancer*, 2021 (In Press).
2. **Gupta, V.**, Braun, T. M., Chowdhury, M., Tewari, M., & Choi, S. W. A Systematic Review of Machine Learning Techniques in Hematopoietic Stem Cell Transplantation (HSCT). *Sensors*, 2020, 20(21), 6100, DOI: 10.3390/s20216100.
3. **Gupta, V.**, Jung, K., Yoo, S. Exploring the Power of Multimodal Features for Predicting the Popularity of Social Media Image in Destination Marketing, *Multimodal Technologies & Interaction*, 2020, 4(3), 64, DOI: 10.3390/mti4030064 .
4. **Gupta, V.**, & R. Hewett. Real-time Tweet Analytics using Hybrid Hashtags on Twitter Big Data, *Information*, 2020, 11(7), 341, DOI: 10.3390/info11070341.
5. Jung, K., Lee, J., **Gupta, V.** & Cho, G. Comparison of Bootstrap Confidence Interval Methods for GSCA Using Monte Carlo Simulations. *Frontiers in psychology*, 2019,10, 2215, DOI: 10.3389/fpsyg.2019.02215.

Refereed Conference Proceedings & preprints

1. **Gupta, V.**, & Hewett, R. Adaptive Normalization in Streaming Data. *In Proceedings of 3rd International Conference on Big Data Research (ICBDR)*, Paris, France, Nov 2019.
2. **Gupta, V.**, & Hewett, R. Unleashing the Power of Hashtags in Tweet Analytics with Distributed Framework on Apache Storm. *In Proceedings of IEEE International Conference on Big Data*, Seattle, WA, USA, Dec 2018.
3. **Gupta, V.** Voice disorder detection using long short term memory (LSTM) model. *arXiv preprint arXiv:1812.01779*, 2018.
4. **Gupta, V.**, & Hewett, R. Harnessing the power of hashtags in tweet analytics. *In Proceedings of IEEE International Conference on Big Data*, Boston, MA, USA, Dec 2017.

Works in Progress

1. Flora, C., Tyler, J., Mayer, C., Warner, D., Khan, S., **Gupta, V.**, Lindstrom, R., Mazzoli, A., Rozwadowski, M., Braun, M., Ghosh, M., Forger, D., Choi, S. W., Tewari, M. High-frequency temperature monitoring and computational analysis enables early detection of febrile adverse events in hematologic cancer patients, 2021, *Cancer Cell (Under Review)*.
2. Weyand, A. C., Fitzgerald, K. D., McGrath, M., **Gupta, V.**, Braun, T., Quint, E.H., & Choi, S. W. Depression in adolescent females presenting to primary care with heavy menstrual bleeding, *The Lancet Psychiatry*, 2020. (Under Review).

Published Abstracts and Presentations

1. Jung, K., Lee, J., **Gupta, V.**, Kim, S., & Hwang, H. Simulation Based Investigation of Optimal Modeling Approaches for SEMs with Ordinal Variables, *The NCME Annual Meeting*, Toronto, Canada, Apr 2019.
2. Jung, K., Lee, J., **Gupta, V.**, Kim, S., & Hwang, H. Application of Generalized Structured Component Analysis for Brain Connectivity Research, *KSEA West Gulf Coast Regional Conference*, Houston, TX, USA, Oct 2018.
3. Pyakurel, A., **Gupta, V.**, Li, Y., Oyedeggi, B., Gittner, K., Pitalua-Rodriguez, M., Guthrie, H., Shetty, R., Mengel, S., Khan, H. MR., Vadapalli, R., & Gittner, L. A Multidisciplinary Preliminary Approach to Systems Thinking for CVD Risk Prevention, *Academy Health National Health Policy Conference*, New Orleans, LA, USA, Jun 2017.
4. Li, Y., Mengel, S., Gittner, L., Pitalua-Rodriguez, M., **Gupta, V.**, Khan, H. MR., Gittner, K., & Pyakurel, A. Relational Analysis through Graph Data Reduction Technique, American Public Health Association Annual Meeting & Expo (APHA), Atlanta, GA, USA, Nov 2017.
5. Pitalua-Rodriguez, M., Mengel, S., Gittner, L., Gittner, K., **Gupta, V.**, Pyakurel, A., Li, Y., Vadapalli, R., & Khan, H. MR. Visualizing Disease Patterns along I-20 from El Paso to Shreveport. *American Public Health Association Annual Meeting & Expo (APHA)*, Atlanta, GA, USA, Nov 2017.
6. Gittner, K., Gittner, L., Khan, H. MR, Mario Pitalua, Pitalua-Rodriguez, M., Pyakurel, A., **Gupta, V.**, & Li, Y., Contrasting Models of Cardiovascular Disease Prediction: Reevaluating Age Adjusted Variables. *American Public Health Association Annual Meeting & Expo (APHA)*, Atlanta, GA, USA, Nov 2017.

Oral Presentations

1. Title: "Adaptive Normalization in Streaming Data". ACM Conference on Big Data Research (ICBDR). Paris, France, Nov 20-22, 2019.
2. Title: "Undertaking Literature review in R". National Wind Institute, Texas Tech University, Lubbock, TX, USA, Mar 29, 2019.
3. Title: "Unleashing the Power of Hashtags in Tweet Analytics with Distributed Framework on Apache Storm". IEEE International Conference on Big Data, Seattle, WA, USA, Dec 10-13, 2018.
4. Title: "Harnessing the power of hashtags in tweet analytics". IEEE International Conference on Big Data, Boston, MA, USA, Dec 11-14, 2017.
5. Title: "Hepatotropic Virus Diagnosis in Human Metabolism using self-organizing map neural networks", National conference on Applications of Data Mining in management of metabolic and degenerative disorders, Amrita Vishwa Vidyapeetham, Mysore, India, April 16-18, 2012

Computer Skills

- **Programming Languages:** R, Python, C, C++, Java, MATLAB
- **Databases:** MySQL, NoSQL
- **Big Data Technologies:** Apache Storm, Kafka, Hadoop, Spark
- **ML/DL Tools:** Pandas, SciKit, numpy, scipy, Tensorflow, Keras
- **Visualization Tools:** Matplotlib, D3.js, ggplot2
- **Operating System:** Windows, Linux
- **Other Tools:** GitHub, Microsoft Office Tools, LaTeX, Maven

Professional Community Activities

Professional services

1. Contributed to research proposal as a senior personnel for applying for NSF MRI grant 2021
2. Review Editor for Journal Frontiers in Psychology: The Quantitative Psychology and Measurement Section 2020

Paper Review Activities

1. ACM Transactions on Knowledge Discovery from Data
2. Journal of Medical Internet Research
3. IEEE Access
4. Nursing Open Journal
5. Electronics
6. Frontiers in Psychology
7. Sustainability
8. International Journal of Environmental Research and Public Health
9. Journal of Imaging
10. Applied Sciences
11. International Journal of Geo-Information
12. Information Processing and Management
13. Security and Communication Networks