Mehak Gupta

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Homepage
in,

Research Interest

My research interest is in Artificial Intelligence (AI) and its interdisciplinary applications. Within AI, I am interested in problems related to natural language processing, representation learning, predictive modeling with supervised and semi-supervised deep learning models, and digital transformation with applications in healthcare and other domains. I am also interested in improving the fairness and explainability of AI systems to enhance their usability and adaptability.

Professional/Research Experience

2023-Present **Assistant Professor**, *Southern Methodist University*.

2021–2022 **Internship Fellow**, *University of Delaware, USA*.

2019–2021 **Research Assistant**, *University of Delaware, USA*.

2018–2019 **Teaching Assistant**, *University of Delaware, USA*.

2014–2017 **Associate Consultant**, *Software AG, Bangalore*.

2010–2012 **System Engineer**, *Infosys Ltd, Pune*.

Education

2018 – 2023 **PhD., Computer Science**, *University of Delaware (4.0 GPA)*.
Thesis Title: Deep Learning Predictive Modelling for Electronic Health Record (*Completed*)
Advisor: Prof. Rahmatollah Beheshti

2012–2014 **Masters in Engineering, Software Engineering**, *Thapar University, India*.
Graduation grade: 8.85 GPA

2006–2010 **Bachelors of Engineering, Computer Engineering** , *Punjabi University, India* .
Graduation grade: 73%

Research Funding

Awarded Proposals.

2023 **Data Science Grant**, *Southern Methodist University*.
Title: Training and evaluation of large language models for psychological assessment
PI: Mehak Gupta, Co-PI: Josh Oltmanns
Total Award Amount:$34,000

2023 **Faculty Research Acceleration Grant**, *Southern Methodist University*.
Title: Fairness-aware Multimodal fusion for healthcare data
PI: Eric Larson, Co-PI: Mehak Gupta
Total Award Amount:$50,000

Publications [Google Scholar Profile]

Conference Publications

2024 Fahmida Liza Piya**,Mehak Gupta**, *and Rahmatollah Beheshti.*, **"HealthGAT: Node Classifications in Electronic Health Records using Graph Attention Networks"**, IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE).

View

2022 **Mehak Gupta**, *Brennan Gallamoza, Nicolas Cutrona, Pranjal Dhakal, Raphael Poulain, and Rahmatollah Beheshti.*, **"An Extensive Data Processing Pipeline for MIMIC-IV"**, In Proceedings of the 2nd Machine Learning for Health symposium, volume 193 of Proceedings of Machine Learning Research, pages 311–325. PMLR.

Acceptance Rate: 28/85.

View

2022 Raphael Poulain**, Mehak Gupta**, *Rahmatollah Beheshti.*, **"Few-Shot Learning with Semi-Supervised Transformers for Electronic Health Records"**, Machine Learning for Healthcare Conference, pages 1–21, 2022.

Acceptance Rate: 33/104.

View

2021 **Mehak Gupta**, *Raphael Poulain, Thao-Ly T Phan, H Timothy Bunnell and Rahmatollah Beheshti.*, **"Flexible-window Predictions on Electronic Health Records"**, In Proceedings of the AAAI Conference on Artificial Intelligence, 36(11):12510-12516.

Acceptance Rate: 22%.

View

2021 Raphael Poulain**, Mehak Gupta**, *Thao-Ly T Phan, H Timothy Bunnell and Rahmatollah Beheshti.*, **"Transformer-based Multi-target Regression on Electronic Health Records for Primordial Prevention of Cardiovascular Disease"**, In Proceedings of the IEEE International Conference on Bioinformatics and Biomedicine (BIBM).

Acceptance Rate: 19%.

View

2021 **Mehak Gupta**, *Thao-Ly T Phan, H Timothy Bunnell and Rahmatollah Beheshti.*, **"Concurrent Imputation and Prediction on EHR data using Bi-Directional GANs"**, In Proceedings of the 12th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics.

Acceptance Rate: 23%.

View

2014 **Mehak Gupta**, *R. Aggarwal*, **"Transforming Relational Database to Graph Database Using Neo4j"**, In Proceedings of the Second International Conference on Emerging Research in Computing, Information, Communication and Applications, Bangalore, India.

Journal Publications

2024 **Mehak Gupta**, *Thao-Ly T Phan, F´elice L^e-Scherban, Daniel Eckrich, H Timothy Bunnell and Rahmatollah Beheshti.*, **"Associations of Longitudinal BMI-Percentile Classification Patterns in Early Childhood with Neighborhood- Level Social Determinants of Health"**, Childhood Obesity 2024 Aug 26; PubMed PMID: 39187268. View.

2024 **Mehak Gupta**, *Thao-Ly T Phan, F´elice L^e-Scherban, Daniel Eckrich, H Timothy Bunnell and Rahmatollah Beheshti.*, **"Reliable prediction of childhood obesity using only routinely collected EHRs is possible."**, Obesity Pillars. 2024 September 10; :100128. DOI: 10.1016/j.obpill.2024.100128. View.

2021 **Mehak Gupta**, *Thao-Ly T Phan, H Timothy Bunnell and Rahmatollah Beheshti.*, **"Obesity prediction with ehr data: A deep learning approach with interpretable elements"**, ACM Transactions on Computing for Healthcare (HEALTH), 3(3):1–19, 2022. View.

Media Coverage

2024 **Liz Scherer**, **"Can AI Plus Electronic Health Records Predict Childhood Obesity Risk?"**, MedScape News. View.

Journal/Conference Reviewer

2024 **Reviewer**, *Health and Place (1 paper).*

2024 **Workshop Editor**, *PErvasive Technologies Related to Assistive Environments (PETRA).*

2024 **Reviewer**, *Frontiers in Oral Health, section Oral Health Promotion (1 papers).*

2024 **Reviewer**, *International Joint Conferences on Artificial Intelligence 2024 (3 papers).*

2024 **Reviewer**, *ACM-Conference on Health, Inference, and Learning 2024 (4 papers).*

2023 **Reviewer**, *IEEE-Biomedical and Health Informatics Journal (1 paper).*

2023 **Reviewer**, *ACM-Conference on Health, Inference, and Learning 2023 (4 papers).*

2022 **Reviewer**, *NeurIPS Workshop TS4H 2022 (3 papers).*

2022 **Reviewer**, *Machine Learning 4 Health 2022 (3 papers).*

2022 **Reviewer**, *ACM-Conference on Health, Inference and Learning (3 papers).*

2020 **Reviewer**, *Journal of Childhood Obesity (1 paper).*

Teaching Experience

Department of Computer Science, Southern Methodist University

Spring 2024 **Instructor**, Operating System, Enrollment:108.

Fall 2023 **Instructor**, Operating System, Enrollment:66.

Department of Computer and Information Sciences, University of Delaware

Fall 2022 **Substitute Instructor**, Introduction to Artificial Intelligence" (Course Code: CISC681) .

Spring 2019 **Substitute Instructor**, "Introduction to Software Engineering" (Course Code: CISC275) .

Spring 2019 **Graduate Teaching Assistant**, "Introduction to Software Engineering" (Course Code: CISC275) .

Fall 2018 **Graduate Teaching Assistant**, "Machine Organization & Assembly Language" (Course Code: CISC260) .

Spring 2013 **Lab Instructor**, *Department of Computer and Information Sciences, Thapar University*, "Introduction to Relational Databases".

Honors and Awards

2022 **Frank A. Pehrson Graduate Student Award for Outstanding Computer Science Research**, *Awarded by Graduate College, University of Delaware.*

2022 **Professional Development Travel Award**, *Awarded by Graduate College, University of Delaware to travel to a conference for poster presentation.*

2022 **Travel Award**, *Awarded by Machine learning for Health Conference..*

2022 **Dissertation Fellowship**, *Awarded by Graduate College, University of Delaware in recognition of the top doctoral students across campus based on nominations from graduate programs and recommendations from a faculty review committee. .*

2021, 2022 **CRA-W Travel Scholarship**, *Awarded by Computing Research Association Women to attend Grad Cohort Workshop, 2021, 2022.*

2020 **Distinguished Graduate student Award** , *Awarded by CIS, University of Delaware CIS 2020 in recognition of graduate students who distinguished themselves through exceptional scholarship, research and noteworthy performance in leadership and service.*.

Talks and Presentations

Invited Talks

2023 **Deep Learning Predictive Modelling for Electronic Health Records**.
Data Science Cluster Meetup, Southern Methodist University

2023 **Prediction Models in healthcare Domain**.
Big Data Advisory Board Meetup, Southern Methodist University

2023 **Deep Learning Models in Healthcare Domain**.
Southern Methodist University

Research Presentations

2022 **An Extensive Data Processing Pipeline for MIMIC-IV**, *Machine learning for Health Conference Poster Presentation, In-Person*.

2022 **Deep Learning Predictive Modelling for Electronic Health Records**, *University of Delaware, PhD Proposal Presentation Talk, via Zoom*.

2021 **Flexible-window Predictions on Electronic Health Records**, *AAAI Conference on Artificial Intelligence, Paper Presentation Talk, via Zoom*.

2021 **Concurrent Imputation and Prediction on EHR data using Bi-Directional GANs**, *12th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics, Paper Presentation Talk, via Zoom*.

2021 **Deep Learning for Obesity Prediction using Electronic Health Records**, *CRA-W Grad Cohort Workshop, Poster Presentation Talk, via Zoom*.

2020 **Obesity Prediction with EHR Data: A Deep Learning Approach with Interpretable Elements**, *University of Delaware, PhD Prelims Presentation Talk, via Zoom*.

2019 **A Survey of Deep Learning Techniques in EHR Prediction Modelling**, *Series of Special Interest Group in Artificial Intelligence, University of Delaware, Presentation Talk, Newark, USA*.

Mentoring

Department of Computer Science, Southern Methodist University

2024 Rasiq Hussain, *Graduate student*.

2024 Jerry Ma, *Undergraduate student*.

2024 Nikkie Hooman, *Graduate student*.

2024 Ritik Khandewal, *Graduate student*.

2024 Siddarth Vats, *Graduate student*.

Department of Computer and Information Sciences, University of Delaware

2022 Haritima Manchanda, *Graduate student*.

2022 Brennan Gallamoza, *Undergraduate student*.

2022 Pranjal Dhakal, *Undergraduate student*.

2022 Nicolas, Cutrona, *Graduate student*.

2021 Raphael Poulain, *PhD student*.

Service to Profession

2023 **Faculty Search Committee**, *Quantum Engineering*.

2023 **Reviewer Mentorship**, *Machine Learning 4 Health 2022 (5 papers)*.

2022 **Senator**, *Graduate Student Government, University of Delaware.* , Served Student Life committee to promote better graduate life for students who are parents..

2022 **Research Grant Contributor**, *Participated in discussion and writing of "Responsible AI to combat childhood obesity", with PI Rahmat Beheshti, "NIH (R01)".*

2022 **Sub-Reviewer**, *ACM-Conference on Bioinformatics, Computational Biology, and Health Informatics (1 paper).*

Diversity and Outreach Activities

2021 **Lead Mentor**, *EmPOWER University of Delaware*, Provide mentorship to graduate students joining Computer and Information Sciences. Planned events to build community and share resources to ease transition to graduate school.

2020–2023 **Webmaster**, *Women in Engineering, University of Delaware*, Provide supportive community for all women in STEM and planned events and maintained website for the committee.

Professional Memberships and Affiliations

2022 **Senator**, *Graduate Student Government, University of Delaware*.

2021–2022 **Data Science Institute Fellow**, *University of Delaware*.

2021 **CIS Representative**, *Student Advisory Committee, College of Engineering, University of Delaware*.

2020–2023 **CIS Representative**, *Women in Engineering, University of Delaware*.

2020–2022 **Peer/Lead Mentor**, *EmPOWER CIS, University of Delaware*.

Technical Skills

Programming	Python | R | Keras | PyTorch | tensorflow | Java | R shiny | SQL
Machine Learning	Neural Networks | Recurrent Neural Network | Attention Models | Convolutional Neural Network | Regression | Random Forest | k-means | Gradient Boosting | Generative Adversarial Network
Certifications	Oracle Certified Professional JAVA SE 6 Programmer | Coursera Introduction to Data Science with Python | Coursera Applied Machine Learning with Python | Coursera Text Mining with Python