Information Technology

IT LAB CONNECTION

Issue 2

"Where data analysis researchers, developers, and end users interact, share, and learn!"

Spring 2024

Research Projects

Graph and Multilayer Networks: Develop efficient and scalable decoupling-based algorithms for substructure, community, centrality, etc.

Graph Mining: Improve performance and scalability of partitioned substructure discovery algorithms.

Graph Querying: Explore efficient and scalable algorithms for querying (not search) very large graphs.

Video Situation Analysis: *Using extracted Video contents* as a stream, specify and detect complex situations using extended Relational and graph models.

MLN-Dashboard: Interactive multi-user dashboard to generate, analyze, and visualize Complex Data using Multilayer Networks.

MavVStream-Dashboard: Dashboard to input query for detecting situations in videos and visualize results.

Information Fusion/Integration: Modeling and analysis of multiple data types (data, image, video, voice) holistically.

Grants

NSF Grant (7/2020 to 6/2025), $996K Total: Collaborative Research: SHF: Medium: **NetSplicer**: Scalable Decoupling-Based Algorithms for Multilayer Network Analysis *(UTA, UNT, PSU)*

NSF Grant (1/2023 to 12/2024), $298K Total: CyberTraining: Pilot: Justice in Data: An intensive, mentored online bootcamp developing FAIR data competencies in undergraduate researchers in the water and energy sectors. *(CSE and Civil Engg., UTA)*

NSF Grant (10/2021 to 6/2023), ~100K Total: Collaborative Research: CCRI: Planning: A Multilayer Network (MLN) Community Infrastructure for Data, Interaction, Visualization, and softwarE (MLN -DIVE) *(UTA, UNT, PSU). Developed MLN-Dashboard*

NSF and COE REU Supplement $40,000

Papers/Theses

PETRA 2024: Leveraging Video Situation Monitoring in Assisted Living Environment.

Frontiers in Big Data Journal 2023: Efficient Community Detection in Multilayer Networks using Boolean Compositions.

ADBIS 2023: Video Situation Monitoring to Improve Quality of Life.

KDIR 2023: Closeness Centrality Detection in Homogeneous Multilayer Networks.

IEEE Big Data Service 2023: (i) Stress Centrality in Heterogeneous Multilayer Networks, (ii) Privacy and Anonymity For Multilayer Networks: A Reflection, (iii) MLN-Visualizer Poster.

DKE Journal 2022: From Base Data to Knowledge Discovery – A Life Cycle Approach –Using multilayer networks.

MS Thesis on HoMLN-SD: Substructure Discovery in Homogeneous Multilayer networks, *Arshdeep Singh, Dec 2023.*

MS Thesis on HeMLN-SD: Substructure Discovery in Heterogeneous Multilayer networks, *Kiran Bolaj, Dec 2023.*

MS Thesis on Centrality Detection in Heterogeneous Multilayer Networks, *Kiran Mukunda, Aug 2021*.

Latest News

Amey Shinde and Kevin Farokhrouz presented **MLN-geeWhiz** at the CoE Banquet 2024.

MLN-Dashboard Version 1.0 was released on September 30, 2023.

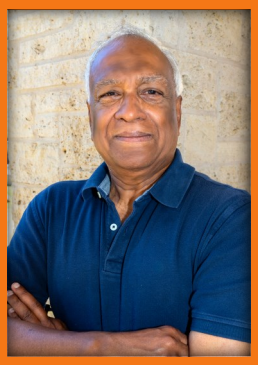
Hafsa Billah's presentation was judged the Best Overall Lightning Talk at the CSE 50th Anniversary Celebration. *(Pictured left.)*

Amey Shinde and Viraj Sabhaya presented at the Innovation Day 2023 and received the Nokia Outstanding Professional CS Student 2023 award conferred by the College of Engineering.

Sharma Chakravarthy was a co-organizer for Big Data and Machine Learning with Privacy Enhancing Tech Workshop 2023.

Scan Me!

Our Team

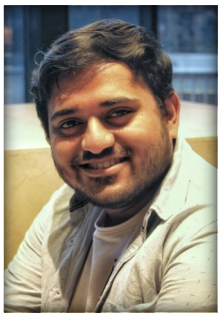


Dr. Sharma Chakravarthy

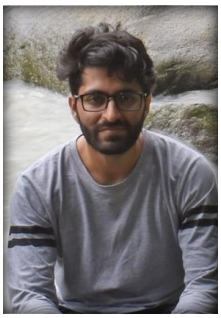
Sharma Chakravarthy is Professor of Computer Science and Engineering Department at The University of Texas at Arlington, since 2000. His group (IT Lab) at UTA is currently developing different paradigms and techniques (mining, machine learning, querying, distributed processing, etc.) for analyzing disparate application data (unstructured, graph, video, etc.) to discover actionable knowledge.

Dr. Abhishek Santra

Hafsa Billah
PhD



Anamitra Roy
PhD

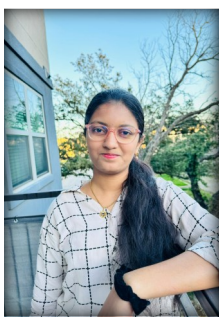


Arshdeep Singh
MS Thesis (2023)

Kiran Bolaj
MS Thesis (2023)

Ayomide Ayowole-Obi
MS Thesis

Kashyap Holla
MS Thesis



Usha Sai Chintha
MS Thesis

Amey Shinde
BS

Viraj Sabhaya
BS

Kevin Farokhrouz
BS