
EDUCATION

- **Ph.D. in Computer Science at Virginia Tech** (2023-Present)
Coursework: Security Risks of Generative AI; Scientific Knowledge-Guided Machine Learning; Network Security; Optimization for Machine Learning; Deep Learning.
- **M.Sc. in Data and Knowledge Engineering at Otto-von-Guericke Universität Magdeburg** (2016-2019)
Selected Coursework: Data Mining; Frequent Pattern Mining; Recommender Systems; Bayesian Networks; Advanced Databases; Distributed Data Management; Machine Learning; Information Retrieval.
- **B.Tech. in Computer Science and Engineering at GITAM University, India** (2009-2013)
Selected Coursework: Probability & Stats; Data Mining; Artificial Intelligence; Data Structures & Algorithms; Discrete Math; Databases; C, C++, Java & Unix Programming; Computer Architecture; Operating Systems.

PUBLICATIONS

- Haider Ali, Ahmad Faraz Khan, **Sindhuja Madabushi**, Ananthram Swami, Rui Ning, Hongyi Wu, and Jin-Hee Cho, "PFI-VFL: Privacy-Preserving Vertical Federated Learning Against Feature Inference Attacks", *IN REVIEW* in **IEEE Transactions on Information Forensics and Security (TIFS) 2025**
- Dawood Wasif, Dian Chen, **Sindhuja Madabushi**, Nithin Alluru, Terrance Moore, Jin-Hee Cho, "Balancing the Scale: Investigating Privacy and Fairness Trade-offs in Federated Learning", *IN REVIEW* in **Proceedings on Privacy Enhancing Technologies Symposium (PETS) 2025**
- **Sindhuja Madabushi** and Parameswaran Ramanathan, "[Two-Cloud Private Read Alignment to a Public Reference Genome](#)," **accepted to Privacy Enhancing Technologies Symposium (PETS) 2023.**
- **Sindhuja Madabushi** and Parameswaran Ramanathan, "[Two-Cloud Private Read Alignment to a Public Reference Genome](#)," **accepted to Privacy Enhancing Technologies Symposium (PETS) 2023.**
- **Sindhuja Madabushi**, "[Graph Sketches and Embeddings: A Study of their Applications in Graph Databases](#)," *Master's Thesis*, Faculty of Computer Science, Otto-von-Guericke-Universität Magdeburg, 2019.
- **Sindhuja Madabushi**, "Novel Network System with Miscellaneous Features," *Bachelor's Thesis*, Department of Computer Science and Engineering, GITAM University, 2013.

WORK EXPERIENCE

- **Research Associate at University of Wisconsin-Madison** (2020-2022)
 - Designed a *scalable cloud-based algorithm for private alignment* of DNA sequence data.
 - Worked with the whole human genome and high volumes of Next Generation Sequencing (NGS) data.
 - Evaluated scalability and accuracy using RNA-Seq, ChIP-Seq, SAMtools, and SimLord.
- **Student Research Intern at PisaSales CRM** (2017-2018)
 - Performed a detailed evaluation study of existing visualization libraries and pitched to senior management a library to integrate with the existing software system.
 - Implemented visualization elements such as heat maps, chord diagrams, Venn diagrams, and hive plots.
 - Designed and integrated a *flexible visualization widget* for customer sales data onto a graphical dashboard.
- **Software Engineer 1 at Innominds Software** (2015-2016)
 - Created *versatile UI elements* such as chatbots, visualizations, and navigation menus for BenchmarkONE's Customer Relationship Management and Sales Automation toolkit.
- **Systems Engineer at Tata Consultancy Services** (2013-2015)
 - Developed a communication portal using C# and Microsoft SQL for Microsoft India's weekly newsletters.
 - Migrated the portal to the cloud based on the client's specifications.
 - Responsible for client communication and maintaining content on the cloud.

TECHNICAL SKILLS

- **Languages:** Python; C#; Java; SQL; JavaScript; \LaTeX
- **Libraries:** PyTorch; TensorFlow; Scikit-learn; NumPy; Matplotlib; Pandas
- **Environments & IDEs:** Linux; Git; Google Cloud Platform; MPI; Cluster Computing; Jupyter Notebook
- **Databases:** Neo4j; MongoDB; Cassandra; Redis; MySQL
- **Frontend and Visualization:** SharePoint; HTML5; CSS3; Bootstrap; d3.js; Dimple.js; Gephi

AWARDS AND SERVICE

- **CAPWIC Conference Travel Award** (2024). Received travel award to attend and give a talk at ACM Capital Region Celebration of Women in Computing held in April 2024.
- **ACSAC Conferenceship Travel Award** (2023). Received confereceship award to attend Annual Computer Security Applications Conference held in December 2023.
- **Volunteer at STEM Santa Fe** (2022). Led the team that mentored ~ 100 school girls for the “Pathways for Girls conference” held in Santa Fe, NM in November 2022.
- **Master’s Mentor at Otto-von-Guericke Universität** (2017-2018). Organized social events for 100 incoming Master’s students. Mentored international students on adapting to changes in cultural environments.
- **Organizer at Magdeburg Indians** (2017-2018). Organized a Summer Fest for about 1000 participants. Led the cultural team that organized several other annual cultural events.
- **Awards and Other Achievements** (2004-2013). Top 10 ranks in the Indian Math Talent Search Exam; Degree in South Indian classical music; Several prizes in the performing arts.

TALKS AND GUEST LECTURES

- **Privacy Preserving and Feature Importance Based Incentive Mechanism in Vertical Federated Learning** (2024). ACM The Capital Region Celebration of Women in Computing Conference (CAPWIC) 2024
- **Exploring NoSQL Databases: Challenges and Opportunities** (2023). Guest Lecture for CS4604, CS5614: Introduction to Database Management Systems, Fall’23, Spring’24 Virginia Tech

ACADEMIC PAPER REVIEWS

- **IEEE Transactions on Network and Service Management** (2024).