Ayesha Samreen

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Github - https://github.com/ayesha0504

PROFESSIONAL EXPERIENCE

Research Assistant, Ames, Iowa, United States   **May 2025 – Present**
Privacy Robustness Enhancing Technologies Lab, Iowa State University
- Conducting research on optimizing the PLRV privacy-preserving mechanism. Reviewing literature and summarizing findings to support ongoing publications.
- Collaborating with faculty and graduate students. Presenting weekly research updates.

Teaching Assistant, Ames, Iowa, United States   **Jan 2025 – Present**
Iowa State University
- Assisted in delivering lectures and recitations for the computer science undergrad courses. Held weekly office hours to support student learning. Assisted in designing and grading assignments, quizzes, and exams.

Enterprise Tools Engineering Intern, Framingham, Massachusetts, United States   **Jun 2023 – Dec 2023**
Staples Inc
- Modernized the Service Portal using JavaScript, reducing page load time by 40%.
- Automated incident creation in ServiceNow, eliminating manual steps and increasing productivity by 12%.
- Developed Automated Test Framework (ATF) test suites, reducing manual testing efforts by 30%.

EDUCATION

Iowa State University, Ames, IA   Jan 2025 - present
Ph.D., Computer Science   **GPA 4.0/4.0**
Coursework: Advanced Topics in Computer Architecture, Advanced Topics in Machine Learning

The University of Texas at Dallas, Richardson, TX   Dec 2023
Master of Science, Computer Science   **GPA 3.84/4.0**
Thesis: Efficient Fair Learning with Subset Selection
Coursework: Machine Learning, Natural Language Processing, Database Design, Design and Analysis of Computer Algorithms, Data Structures and Algorithms, Operating Systems, Discrete Structures, Big Data Management and Analytics

Chaitanya Bharathi Institute of Technology, India   Nov 2020
Bachelor of Engineering, Electronics and Communication Engineering   **GPA 9.2/10**
Scholastic Achievements: Gold Medalist, top score over 4 years

TECHNICAL SKILLS

Programming: JAVA, Python, HTML, CSS, JavaScript, React, Node.js, Express.js
Machine Learning and AI Tools: PyTorch, TensorFlow, Keras, Scikit-Learn, Spacy, NLTK
Big Data: Hadoop, MapReduce, HDFS, Apache Spark, PySpark, RDD, DataFrames, MLib, GraphX, Kafka, Spark SQL
Databases: MySQL, PostgreSQL, MongoDB, Cassandra, Hbase, Hive, SQL Server
APIs and Server Handling: SOAP, REST, JSON
Tools: GCP, AWS, Azure, EC2, S3, Databricks
Version Control and Testing: Gitlab, Git, Github, Postman, Unit Testing Junit
CI/CD pipelines and Operating Systems: GitLab CI, Windows, Linux, Ubuntu, RTOS
Other: Distributed systems, Object Oriented Design, System Design, Networking

ACADEMIC PROJECT EXPERIENCE

V6 File System, Operating Systems   Aug 2021 – Dec 2021
- Developed a modified V6 file system using C from scratch. Utilized Unix system calls to execute file system operations.

Privacy Preserving DL with Intel SGX, Advanced Topics in Computer Architecture   Jan 2025 – May 2025
- Implemented privacy-preserving DL model using Intel SGX, enabling secure model training and inference within a Trusted Execution Environment; evaluated performance trade-offs between SGX-secured and traditional executions for lightweight neural networks.

Multilingual Vision-Language Alignment for Cross-Lingual Retrieval, Advanced Topics in ML   Jan 2025– May 2025
- Developed a multilingual cross-modal retrieval system by aligning CLIP image embeddings with XLM-R text embeddings using contrastive learning and knowledge distillation, enabling efficient image-text retrieval across multiple languages without retraining large models.

Weather Data Analysis and Forecast, Big Data Management and Analytics   Aug 2023 – Dec 2023
- Analyzed, transformed, and evaluated the large data sets in the data pipeline, constructing various neural network models from scratch to improve time-series predictions. Performed batch processing.
- Utilized Matplotlib for comparative analysis, reducing prediction error by over 90% with multi-layer LSTM models.

Flybnb, Web Programming Languages   Aug 2022 – Dec 2022
- Developed a property management website with the MERN stack (React, Bootstrap, Express, Node.js, MongoDB).
- Implemented user sign-up/login, search, bookings, and reviews features, boosting user engagement.
- Adopted microservices architecture, developed REST APIs for CRUD operations, and used AJAX calls.

Wonder Library, Database Design   Jan 2022 – May 2022
- Led the design and development of an RDBMS for library management with MySQL, ensuring adherence to ACID.
- Designed an EER diagram and implemented a normalized schema, reducing redundancy and data consistency.
- Created SQL queries and VIEWs to display popular books, top gold members, etc to improve query efficiency.

RESEARCH EXPERIENCE

MS Thesis, The University of Texas at Dallas   Jan 2022 – Dec 2023
Efficient Fair Learning with Subset Selection
Advisor: Dr. Rishabh Iyer, Assistant Professor, The University of Texas at Dallas
- Developed a novel fair and efficient machine learning technique incorporating subset selection to enhance fairness metrics such as demographic parity difference, equalized odds difference, and equal opportunity difference.
- Implemented a bi-level optimization approach for data subset selection, reducing computational costs while enhancing fairness during model training.
- Conducted comprehensive experiments demonstrating the method's effectiveness across various practical data sets, validating performance against existing fair learning techniques.

BE Thesis, Chaitanya Bharathi Institute of Technology   Jun 2019 – May 2020
Brain Tumor Detection using Convolution Neural Networks
Advisor: Dr. P Sathish, Assistant Professor, Chaitanya Bharathi Institute of Technology

Research project, Chaitanya Bharathi Institute of Technology   Nov 2018 – Apr 20219
Low Cost IoT Based Emission Monitoring System for Thermal Power Plants
Advisor: Dr. P Sathish, Assistant Professor, Chaitanya Bharathi Institute of Technology

Research project, Chaitanya Bharathi Institute of Technology   Mar 2019 – Jul 2019
Monitoring of Patient Critical Health Parameters by using a Low-Cost IoT based System
Advisor: Dr. P Sathish, Assistant Professor, Chaitanya Bharathi Institute of Technology

PUBLICATIONS

- Samreen, A. (2023). Efficient Fair Learning with Subset Selection. Master's Thesis, The University of Texas at Dallas. https://hdl.handle.net/10735.1/10034
- Samreen, A., Taha, A. M., Reddy, Y. V., & P, S. (2020). Brain Tumor Detection by Using Convolution Neural Network. *International Journal of Online and Biomedical Engineering (iJOE)*, *16*(13), pp. 58–69. https://doi.org/10.3991/ijoe.v16i13.18545
- A. Samreen, P. Sathish and N. A. Manga, "Low Cost IoT Based Emission Monitoring System for Thermal Power Plants," *2019 Innovations in Power and Advanced Computing Technologies (i-PACT)*, Vellore, India, 2019, pp. 1-5, doi: 10.1109/i-PACT44901.2019.8960194.
- P. Sathish, Ayesha Samreen and N.Alivelu Manga. Monitoring of Patient Critical Health Parameters by using a Low-Cost IoT based System. Journal of Xidian University, Volume 14, Issue 8, 2020, pp. 694-703. https://doi.org/10.37896/jxu14.8/075

AWARDS AND SCHOLARSHIPS

- Institute Gold Medal, AY 2019-20, Chaitanya Bharathi Institute of Technology
- CM's Overseas scholarship, Telangana, India, 2022
- Silver Medal, Academic Excellence, AY 2018-19, Chaitanya Bharathi Institute of Technology
- Silver Medal, Academic Excellence, AY 2017-18, Chaitanya Bharathi Institute of Technology
- Silver Medal, Academic Excellence, AY 2016-17, Chaitanya Bharathi Institute of Technology
- Merit Scholarship, 2016, City Police Co-operative Credit Society
- Merit Scholarship, 2014, City Police Co-operative Credit Society

MEMBERSHIPS AND LEADERSHIP POSITIONS

President, Synapse2k19, Department Technical Fest CBIT	Jul 2019 – Oct 2019
Executive Member, IEEE CBIT Student Chapter	Jun 2019 – Oct 2020
Vice President, Synapse2k18, Department Technical Fest CBIT	Jul 2018 – Oct 2018
Documentation Coordinator, Robovanza2k18, Robotics Technical Fest CBIT	Jun 2018 – Oct 2018
Executive Member, CBIT Toastmasters	Jun 2017 – May 2018
Delegate, CBIT Inter-Collegiate Conference, Canada representative in UNGA-DISEC	Apr 2017