SARA SAMEER

Singapore | saraasameer.github.io/ | sarasameer991@gmail.com | linkedin.com/in/sarasameer/

RESEARCH INTERESTS

Spatio-Temporal Data Mining, Model Fusions for Multivariate Time-Series Analysis, Multi-modal Learning for Temporal Settings.

EDUCATION

National University of Computer and Emerging Sciences **Karachi, Pakistan**
Bachelor of Science in Computer Science [CGPA: 3.66 / 4.00], Honors, Cum Laude 08/2019 - 06/2023
Relevant Courses: Programming Fundamentals, Data Structures, Object-Oriented Programming, Operating Systems, Information Processing Techniques, Multivariate Calculus, Probability and Statistics

Harvey Mudd College **Claremont, California**
Summer Exchange Student [Grade: 4.00 /4.00] 06/2021 - 08/2021
Relevant Coursework: MATH189R Mathematics of Big Data

PEER-REVIEWED PUBLICATIONS AND PATENT

2025 | Systems for Training a Learning Model to Predict a Cycling Characteristic Via a Physics Model
US Patent Application No. 18/619,815 – Filed on March 28, 2024
Alexander T. Pham, Constantin-Daniel Nicolae, Nathan Sun, Karena Yan

2025 | GINET: Integrating Sequential and Context-Aware Learning for Battery Capacity Prediction
IEEE Vehicular Technology Conference (VTC) **[Oral Presentation]**
Sara Sameer, Wei Zhang, Xin Lou, et al.

2024 | Optimizing Cycle Life Prediction of Lithium-ion Batteries via a Physics-Informed Model
*Transactions of Machine Learning Research (TMLR***)** **[Tier 01 Journal]**
also presented at Joint Mathematics Meetings (JMM) **[World's Largest Mathematics Conference]**
Constantin-Daniel Nicolae, **Sara Sameer**, Nathan Sun, Karena Yan

RESEARCH EXPERIENCE

Singapore Institute of Technology **Singapore**
Research Engineer 08/2024 – Present
Supervisor: Dr. Zhang Wei and Dr. Vijay Babu Pamshetti

- Collaborating on the project "Machine Learning-based Battery Performance Management for Rugged Systems in Tropics" (SIT Ignition Grant) to develop temperature-aware battery models using ST Engineering data for reliable performance in Singapore's tropical climate.
- Optimized transformer-based battery models for edge deployment by applying quantization and sequence windowing, enabling real-time prediction.
- Engineered temporal attention mechanisms within transformers to prioritize critical operational intervals, improving early detection of battery degradation and anomalies.

University of California, Los Angeles **California**
Research Intern 06/2023 – 08/2023
Supervisor: Dr. Tan Nguyen and Dr. Lingyun Ding

- Worked on a project along with 3 other colleagues to develop a physics-inspired model for accurately measuring the cycle lifetime of a lithium-ion battery.
- Introduced a multi-stage self-attention training scheme that improved cycle life prediction. This enabled comprehensive forecasts of electric charge capacity curves throughout a battery's entire lifespan, resulting in predictions that outperformed the baseline model by 34%.

- Presented the research findings at University of California, Los Angeles (2023), Toyota Research Institute in San Jose (2023), and Joint Mathematics Meeting (2024) in San Francisco.

TEACHING EXPERIENCE

National University of Computer and Emerging Sciences **Karachi, Pakistan**
Teaching Assistant 09/2021 – 05/2023

- Mentored 40+ students in **Data Structures** (Sept 2021–Jan 2022), **Probability and Statistics** (Sept 2022–Jan 2023), and **Numerical Computing** (Feb 2023–May 2023).

INDUSTRY EXPERIENCE

Techlogix **Karachi, Pakistan**
Data Scientist 08/2023 – 07/2024
Supervisor: Salman Akhtar, Dr. Qasim Sheikh

- Developed a machine learning model for credit scoring, incorporating custom metrics such as portfolio size and the Kolmogorov-Smirnov (KS) Test to enhance efficiency and improve lending decision-making.
- Conducted n-gram analysis on transactional narrative data provided by banks to gain insights into repayment history and borrower behavior, enhancing lending decision-making.
- Collected and validated data from SSMS and Excel. Designed Power BI dashboards to extract customer behavior insights and improved dashboard usability.

HONORS AND AWARDS

- **Toyota Research Institute Patent Recognition** (2024): My work on 'Optimizing Cycle Life Prediction of Lithium-ion Batteries via a Physics-Informed Model" has been accepted for a patent.
- **Fully Funded Research in Industrial Projects RIPS** (2023): Funded by National Science Foundation (NSF), Selected from 5,000+ global applicants (12 non-US slots available, 0.24% acceptance rate).
- **Fully Funded Sister2Sister Exchange Program** (2022): Chosen among 15 recipients from 3,000+ Pakistani female applicants to attend a summer semester in a US University.
- **Merit-cum-Need-Scholarship** (2019-2023): Orange Tree Foundation and Sindh Endowment Government scholarship recipient (awarded to top 5% of batch students).
- **Dean's List Honor** (2019-2023): Consistent academic excellence across 7 semesters, *Cum Laude* graduation

ACADEMIC SERVICES

Peer review Service:

- Reviewer, IEEE Internet of Things Journal (2024), AAAI Conference (2026)

Editorial service:

- Manuscript review expertise in multivariate time-series analysis, and energy storage systems
- Average review turnaround time: 1-2 weeks with detailed technical feedback

VOLUNTEER AND LEADERSHIP

- Volunteer at Ismaili Civic Singapore, organized wellness programs for senior citizens *(Aug 2024 – Present)*
- Chapter Lead at Association for Computing Machinery's Council on Women in Computing *(2022-23)*
- Sign Language Interpreter at ConnectHear *(Summer 2020)*
- Member of Pakistan US Alumni Network *(May 2021 - Present)*

SKILLS

Applied AI: Time Series LLMs Fine-Tuning, Edge Deployment
Programming Tools: Python, C/C++, SQL, R
Research Tools: Scikit-Learn, TensorFlow, PyTorch, Hugging Face
Other Primitives: Microsoft Power BI, Latex, SQL, Git, Flask, Fast API