SARWAN ALI

Department of Computer Science
Georgia State University
Github Profile [1] , Google Scholar Profile [2]

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RESEARCH INTERESTS

- Machine Learning, Artificial Intelligence, Data Mining, Algorithms, Bioinformatics, Combinatorial Optimization

EDUCATION

- Georgia State University, Atlanta   January 2021 - June 2026
  Ph.D (Computer Science) , **Advisor:** Murray Patterson

- Lahore University of Management Sciences (LUMS), Lahore   August 2016 - June 2018
  M.S (Computer Science)

  - **MS Thesis Title:** Predicting Attributes of Nodes using Network Structure
    Status: Published in ACM Transactions on Intelligent Systems and Technology (TIST), (2020)
    Thesis URL: `https://dl.acm.org/doi/abs/10.1145/3442390`

- University of Engineering and Technology (UET), Peshawar   August 2012 - June 2016
  B.S (Computer Science)

  - **BS Thesis Title:** Cache Replacement Algorithm
    Thesis URL: `https://arxiv.org/abs/2107.14646`

RESEARCH EXPERIENCE

- Georgia State University, Atlanta, USA   January 2021 - Present

  - ***Graduate Research Assistant***
    * **Sarwan Ali**, Bikram Sahoo, Pin-Yu Chen, Murray Patterson "Benchmarking Machine Learning Robustness in Covid-19 Spike Sequence Classification" Under Review
      `https://openreview.net/pdf?id=V7eSbSAz-08`
    * **Sarwan Ali**, Murray Patterson, "Spike2Vec: An Efficient and Scalable Embedding Approach for COVID-19 Spike Sequences" Under Review
      `http://arxiv.org/abs/2109.05019`
    * **Sarwan Ali**, Babatunde Bello, Prakash Chourasia, Ria Thazhe Punathil, Murray Patterson. "Alignment-Free Host Classification from Coronavirus Spike Sequences"
      `https://drive.google.com/file/d/1O8LnahDuJNLEDX-3LW4_XVOXMQmdKQVV/view?usp=sharing`
    * **Sarwan Ali**, Yijing Zhou, Murray Patterson. "Efficient Analysis of COVID-19 Clinical Data using Machine Learning Models"
      `https://drive.google.com/file/d/18_iEANSehLm5-ERs-_dByiX7M8LSP1Xt/view?usp=sharing`
    * Zahra Tayebi, **Sarwan Ali**, Murray Patterson. "Robust Representation and Efficient Feature Selection Allows for Effective Clustering of SARS-CoV-2 Variants"
      `https://drive.google.com/file/d/1UnPNGGYtPReK1ZmpeYnLv7p23mdz83QJ/view?usp=sharing`
    * **Sarwan Ali**, Murray Patterson. "Breast Cancer Prediction Using Locality Sensitive Hashing" Preprint (2021)

- University of Newcastle, NSW, Australia   March 2020 - Present
  - ***Research Collaboration***
    I am currently working on a research project with Professor Pablo Moscato (`https://www.newcastle.edu.au/profile/pablo-moscato`) and Dr. Luke Mathieson (`https://www.uts.edu.au/staff/luke.mathieson`).
    * **Sarwan Ali**, Luke Mathieson, and Pablo Moscato. "A Memetic Algorithm To Find a Hamiltonian Cycle in a Hamiltonian Graph"
      Preprint (2020)
      URL: `https://drive.google.com/file/d/1W_VvGVrUot0EtBlRdKtReuCWtkUUOReY/view?usp=sharing`
    * **Sarwan Ali**, and Pablo Moscato. "Solving Asymmetric Traveling Salesman Problem via Matrix Sparsification"
      Preprint (2021)

- Lahore University of Management Sciences (LUMS), Lahore, Pakistan   July 2018 - Present

  - ***Research Associate*** (Data Analytics Lab)
    * Inaam Ul Hassan, Abdul Haseeb, **Sarwan Ali**. "Locally Weighted Mean Phase Angle (LWMPA) Based Tone Mapping Quality Index (TMQI-3)", Accepted at: International Conference on Intelligent Vision and Computing (ICIVC 2021)

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[1] `www.github.com/sarwanpasha`
[2] `https://scholar.google.com/citations?user=9dtXSoAAAAAJ&hl=en`
[3] `https://sarwanpasha.github.io/`
[4] `www.orcid.org/0000-0001-8121-2168`

∗ **Sarwan Ali**, Haris Mansoor, Imdadullah Khan, Naveed Arshad, Muhammad Asad Khan, and Safiullah Faizullah. "Hour-Ahead Load Forecasting Using AMI Data." Under review
URL: **https://arxiv.org/abs/1912.12479**

∗ **Sarwan Ali**, Imdadullah Khan, Muhammad Asad Khan, and Safiullah Faizullah. "Fake News Detection using Graph Representation" Preprint

∗ Naimat ullah, **Sarwan Ali**, Muhammad Ahmad, Imdadullah Khan, Muhammad Asad Khan, and Safiullah Faizullah. "Context-Aware contribution calculator: Rating Players in Limited Overs Cricket". Under review

∗ Nimrah Mustafa, **Sarwan Ali**, Zartash Uzmi, Imdadullah Khan, Muhammad Asad Khan, and Safiullah Faizullah. "Social Community Based Content Caching in Wireless Networks". Under review

∗ Muhammad Ahmad, **Sarwan Ali**, Muhammad Haroon Shakeel, Imdadullah Khan, Arif Zaman, and Asim Karim. "Efficient Data Analytics on Augmented Similarity Triplets." Preprint (2020)
URL: **https://arxiv.org/abs/1912.12064**

∗ **Sarwan Ali**, Imdadullah Khan, and Muhammad Asad Khan. "Detecting Slow Ternary Content-Addressable Memory (TCAM) exhaustion Attack on SDN Due to Vulnerabilities in OpenFlow". Preprint (2020)

- CECOS University, Peshawar, Pakistan   July 2020 - Present
  - *Research Collaboration*
    ∗ **Sarwan Ali**, Abdul Haseeb. "Universities Ranking System Using Self and Cross Proclivity". Preprint (2020)

- Higher Education Commission (HEC), Islamabad, Pakistan   March 2020 - Present
  - *Data Analytics Project*
    Project of HEC to predict the final marks of higher secondary school students using their previous years performance. This prediction is necessary because of cancellation of final exams due to Covid-19 pandemic.

- Pakistan Space & Upper Atmosphere Research Commission (SUPARCO), Karachi, Pakistan   July 2014 - Jan 2015
  - *Student Project*
    National Student Satellite (PNSS-1) mission

- Conference/Journal Reviewer
  - AusDM (2018), Neurips (2019), ICML (2019), AAAI (2019, 2020), AECT (2019), TIST (2020)

HONOURS AND AWARDS

- *Individual*

  - **Graduate Research Assistantship**: Fully funded scholarship for Ph.D. studies at Georgia State University
  - **NOP Scholarship**: Fully funded scholarship for MS computer science at LUMS ($\sim$ 1.6 Million PKR)
  - **Speed Programming:** Secured first position in Speed Programming competition held at UET Peshawar in 2015

- *As a member of a team*

  - **Grant from SUPARCO:** Won the grant to design "Telecommand Receiver Unit" for PNSS-1 Satellite which was part of Pakistan National Student Satellite Mission in 2014
  - **Best Android Application:** Awarded 1st prize by Government of KPK in 2015
  - **Best Business Model:** Awarded 1st prize by Tie Islamabad, Peshawar chapter in 2015
  - **Government Grant:** For Emergence Rescue Application (worth $\sim$ 1 million PKR) from Government of Pakistan

PUBLICATIONS

- *Journals (3)*

  - **Sarwan Ali**, Simone Ciccolella, Lorenzo Lucarella, Gianluca Della Vedova, Murray Patterson. "Simpler and Faster Development of Tumor Phylogeny Pipelines" **Accepted** in Journal of Computational Biology

  - **Sarwan Ali**, Muhammad Haroon Shakeel, Imdadullah Khan, Safiullah Faizullah, and Muhammad Asad Khan. "Predicting Attributes of Nodes Using Network Structure." ACM Transactions on Intelligent Systems and Technology (TIST), (2020) . **URL: http://dx.doi.org/10.1145/3442390**

  - Muhammad Ahmad, **Sarwan Ali**, Juvaria Tariq, Imdadullah Khan, Mudassir Shabbir, and Arif Zaman. "Combinatorial trace method for network immunization." Information Sciences 519 (2020): 215-228.
    URL: **https://www.sciencedirect.com/science/article/pii/S0020025520300396?via%3Dihub**
    Acceptance rate: 22%

- *Conference Proceedings (7)*

  - Inaam Ul Hassan, Abdul Haseeb, **Sarwan Ali**. "Locally Weighted Mean Phase Angle (LWMPA) Based Tone Mapping Quality Index (TMQI-3)." In International Conference on Intelligent Vision and Computing (ICIVC), 2021.

  - **Sarwan Ali**, Tamkanat-E-Ali, Muhammad Asad Khan, Imdadullah Khan, Murray Patterson. "Effective and scalable clustering of SARS-CoV-2 sequences." In International Conference on Big Data Research (ICBDR), 2021.

- **Sarwan Ali**, Bikram Sahoo, Naimat Ullah, Alexander Zelikovskiy, Murray Patterson, Imdadullah Khan. "A k-mer Based Approach for SARS-CoV-2 Variant Identification." In International Symposium on Bioinformatics Research and Applications (ISBRA), 2021.
- **Sarwan Ali**, Haris Mansoor, Naveed Arshad, and Imdadullah Khan. "Short Term Load Forecasting using Smart Meter Data." In Proceedings of Tenth ACM International Conference on Future Energy Systems, pp. 419-421. 2019. **URL:** `https://dl.acm.org/doi/abs/10.1145/3307772.3330173`
- **Sarwan Ali**, Maria Khalid Alvi, Safi Faizullah, Muhammad Asad Khan, Abdullah Alshanqiti, and Imdadullah Khan. "Detecting DDoS Attack on SDN Due to Vulnerabilities in OpenFlow." International Conference on Advances in the Emerging Computing Technologies (AECT), pp. 1-6, 2019. **URL:** `https://www.researchgate.net/publication/338987710_Detecting_DDoS_Attack_on_SDN_Due_to_Vulnerabilities_in_OpenFlow#fullTextFileContent`
- **Sarwan Ali**, Haris Mansoor, Imdadullah Khan, Naveed Arshad, Muhammad Asad Khan, and Safiullah Faizullah. "Fair allocation based soft load shedding." In Intelligent Systems Conference (IntelliSys), pp. 407-424, 2020. **URL:** `https://doi.org/10.1007/978-3-030-55187-2_32`
- Asad Ullah, **Sarwan Ali**, Imdadullah Khan, Muhammad Asad Khan, and Safiullah Faizullah. "Effect of Analysis Window and Feature Selection on Classification of Hand Movements Using EMG Signal." In Intelligent Systems Conference (IntelliSys), pp. 400-415, 2020. **URL:** `https://doi.org/10.1007/978-3-030-55190-2_30`

TEACHING AND PROFESSIONAL EXPERIENCE

- Georgia State University, Atlanta, USA
  - *Teaching Assistant*
    * CSC 4760 Big Data Programming — June 2021 - August 2021
    * CSC 2720 Data Structures — August 2021 - December 2021
- Lahore University of Management Sciences, Lahore, Pakistan
  - *Teaching Assistant*
    * CS 210 Discrete Mathematics — August 2017 - January 2018
    * CS 510 Design & Analysis of Algorithm — August 2018 - January 2019
    * CS 5312 Big Data Analytics — January 2019 - June 2019
    * CS 5312 Big Data Analytics — January 2020 - June 2020
  - *Web Developer*
    * High Performance Computing Lab — July 2017 - September 2017
- University of Engineering and Technology, Peshawar, Pakistan
  - *Android Instructor* — June 2016 - July 2016
- Freelancing
  - *Software Development* — January 2014 - Present

COURSES

- Advanced Machine Learning
- Image and Video Encoding
- Design and Analysis of Algorithms
- Advance Computer Architecture
- Software Engineering for Smart Grid
- Data Mining
- Advance OS
- Applied Probability
- Software Reuse
- Big Data Analytics

References

- Dr. Pablo Moscato — pablo.moscato@newcastle.edu.au
- Dr. Murray Patterson — mpatterson30@gsu.edu
- Dr. Imdadullah Khan — imdad.khan@lums.edu.pk
- Dr. Iftikhar Ahmad — ia@uetpeshawar.edu.pk
- Dr. Arif Zaman — arifzaman@gmail.com

ADDITIONAL SKILLS AND EXPERIENCE

- **IT SKILLS:** R, Matlab, Java, Weka, C++, Python
- **SPORTS:** Basketball (won inter-school basketball championship), Cricket (won inter-departmental cricket championship)
- **VOLUNTEER WORK:** Worked as instructor at Special school involving children with disabilities.