Saad Sher Alam

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Education

Lahore University of Management Sciences (LUMS), BS CS — Sept 2020 - May 2024

CGPA: 3.86

Coursework Includes: Distributed Systems, Network-Centric Computing, *Network Security*, *Topics in Internet Research*, Operating Systems, *Machine Learning, Computer Vision*, Data Science, Software Engineering, Databases (Graduate courses are mentioned in *italics*).

Publications (Submitted)

- Mazhar A., **Alam S**., Zheng W., Chen Y., Nath S., Xu T. Fidelity of Cloud Emulators: The Imitation Game of Testing Cloud-based Software. In submission at the 47th International Conference on Software Engineering (ICSE'25).

Publications (Accepted)

- Atique E*., **Alam S***., Ahmad H., Qazi I., Qazi Z. Uncovering the Hidden Data Costs of Mobile YouTube Ads. In Proceedings of ACM The Web Conference (TheWebConf'24, formerly WWW). [*Joint First Authors]

Research Experience

Networks and Systems Group, LUMS - Research Assistant — May 2022 - Present

Advisors: Dr. Zafar Ayyub Qazi, Dr. Ihsan Ayyub Qazi

- Scraped data using Selenium to uncover the cost of YouTube ads and their impact on affordability of the internet.
- Collected data for 17600 YouTube videos and 46600 YouTube ads across 8 countries.
- We show that avoidable and unnecessary buffer losses in YouTube account for 7% of a 2GB data plan on average.
- We aim to expose inefficiencies in YouTube streaming and call for an affordability aware streaming algorithm.

SysNet Group, UIUC - Research Intern — May 2023 - Present

Advisor: Dr. Tianyin Xu

- Conducted differential testing of cloud services to reveal discrepancies between cloud services and emulators.
- Led application testing to reveal practical implications of discrepancies. Out of the 12 apps tested, 7 of them exhibit discrepancies.
- Devised a framework by collecting HTTP traffic from emulators to analyze cost savings. In the best case we show that 20.3% savings can be realized for GET requests, and 48.4% for POST requests.
- We aim to improve emulation practices and motivate the need for better testing practices.

Internet Security and Privacy Lab, LUMS - Research Assistant — May 2022 - Dec 2022

Advisors: Dr. Zartash Afzal Uzmi, Dr. Naveed ul Hassan

- Designed a first of its kind graduate level research course on Blockchains, CS589: Recent Developments in Blockchain Technologies.
- Supervised 2 research based course projects.

Teaching

CS589: Recent Developments in Blockchain Technologies - Teaching Assistant — Fall 2022

CS202: Data Structures - Teaching Assistant — Spring 2023
CS334: Principles and Techniques of Data Science - Teaching Assistant — Fall 2023
CS473: Network Security - Teaching Assistant — Spring 2024

Technical Skills

Languages: Python, C/C#/C++, HTML/CSS, JavaScript/TypeScript, Golang, Haskell, SQL, MATLAB
Frameworks/Libraries: React, Node.js, Socket.io, Redux, Selenium, Pandas, NumPy, Matplotlib, Tensorflow, PyTorch
Developer Tools: Github, Linux, Google Cloud Platform, VSCode, Jupyter

Projects

Guftaar | *React, JavaScript, Node.js, MongoDB*

- Developed a first of its kind m-health platform in Pakistan to connect speech therapists to speech impaired clients.
- Successfully deployed the website and signed-up our first certified speech instructor within 24 hours of deployment.

RAFT: A Distributed Consensus Protocol | *Golang*

- Implemented RAFT as described in: In Search of an Understandable Consensus Algorithm (Ongaro et al.)
- Created a fault tolerant key-value server on top of RAFT.

Authorship Attribution | *Python, Sickit-learn, PyTorch, NumPy, Matplotlib*

- Collected 5000 tweets across 5 trending twitter handles using public twitter APIs.
- Evaluated performance of kNN, Neural Networks, and Random Forests for authorship attribution.
- Generalized findings to 2 feature representations: TF-IDF and Word Embeddings.

Early Stage Diabetes Prediction | *Python, Sickit-learn, NumPy, Matplotlib*

- Evaluated performance of kNN, Naive Bayes, Random Forests, and Decision Trees for diabetes classification.
- Concluded that Random Forest is the best performing model for diabetes classification with 98.8% recall.
- Summarized our findings in the following blog post: link.

UNO | *React, Bootstrap, Redux, Socket.io*

- Created an online UNO game that can support 4 players and integrates in-game chat features.

Threading Library | *C*

- Developed a threading library using system calls which provides priority-based and round-robin scheduling options.
- Integrated support for semaphores in the library.

Chord DHT | *Python*

- Designed a fault tolerant distributed hash table utilizing consistent hashing.
- Optimal load distribution is achieved by using 3 virtual nodes for each client.

Awards/Honors

Merit Scholarship LUMS (Top 10 at School of Science and Engineering, LUMS) — 2021 - 2023
Dean's Honor List — 2020 - 2023
Merit Scholarship GCSE A-Levels — 2018 - 2020

Extra-Curriculars

Peer Ambassador at LUMS for Social Support (PALss) — 2023 - 2024
Teaching Assistant at Future Tech, LUMS Summer School — 2023
Assistant Director of Bridging Barriers, LUMS Community Service Society — 2020 - 2021