

# Mughees Ur Rehman

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## Education

### Virginia Tech

*Masters in Computer Science*

**Cumulative GPA: 4.00/4.00**

**August 2024 – May 2026**

*Blacksburg, VA, USA*

### Lahore University of Management Sciences (LUMS)

*Bachelors in Computer Science*

**Cumulative GPA: 3.97/4.00**

**September 2020 – June 2024**


*Lahore, Pakistan*

## Publications

### Towards Fairer AI: Multi-Agent Debiasing of LLMs With Online Evidence Retrieval **November 2025**

*AAAI Fall 2025 Symposium*

*Arlington, VA, USA*

- **Mughees Ur Rehman**, Saleha Muzammil.
-  [Code](#)

### Edge Caching as Differentiation

*ACM SIGCOMM 2025*

**September 2025**

*Coimbra, Portugal*

- Muhammad Abdullah, **Mughees Ur Rehman**, Pavlos Nikolopoulos, Katerina Argyraki.
-  [Paper](#) |  [Presentation](#) |  [Artifacts](#)
-  [Best Student Paper Award](#)

## Research Experience

### Data Security and Privacy Lab, Virginia Tech

*Research Associate*

**September 2024 – Present**

*Blacksburg, VA, USA*

- Conducting research under the supervision of [Prof. Murat Kantarcioglu](#) at the intersection of AI and cybersecurity, applying LLMs to strengthen network intrusion detection systems against evolving malware traffic patterns.
- Performed dynamic analysis of malware samples using the Cuckoo sandbox to capture and examine large-scale network traffic, identifying family specific communication and evasion patterns.
- Designing an LLM driven Agentic framework to automatically generate and refine Suricata detection rules from observed traffic, making intrusion detection systems more adaptive and robust during dynamic malware analysis.

### University of Illinois Urbana-Champaign

*Research Intern*

**June 2025 – August 2025**

*Remote - IL, USA*

- Worked as a research intern, contributing to SREArena, a unified framework for benchmarking autonomous Site Reliability Engineering (SRE) agents through reproducible and scalable fault injection in Kubernetes clusters.
- Enhanced the framework's evaluation capabilities by integrating new fault scenarios and telemetry pipelines for microservice applications.

### EPFL

*Research Intern*

**May 2024 – August 2024**

*Lausanne, Switzerland*


- Worked under the supervision of [Prof. Katerina Argyraki](#) at the [Network Architecture Lab \(NAL\)](#), developing Selenium web crawlers in Python on AWS EC2 instances to scrape 25+ streaming sites, collecting hit rate and latency data to analyze CDN performance.
- Analyzed video streaming data to quantify edge caching's impact on QoE, revealing significant disparities in CDN hit/miss rates and their broader implications.
- Investigated disparities in cache hit rates across major CDN providers and demonstrated how such differences can unintentionally cause QoE variation and mirror traffic prioritization, affecting competitiveness among content providers.
- Co-authored the paper [Edge Caching as Differentiation](#), published at ACM SIGCOMM 2025.

### Networks and Systems Group LUMS

*Research Associate*

**June 2022 – May 2024**

*Lahore, Pakistan*

- Worked under the supervision of [Prof. Zafar Ayyub Qazi](#) at the [Networks and Systems Group \(NSG\)](#), focusing on edge computing and stateful application migration in 5G environments.
- Developed a low-latency key-value datastore based on a custom hashed queue data structure to enable efficient state migration on the network edge. ( [Project Repository](#))
- Initiated the project Re-thinking Redis for Edge Networks, addressing bottlenecks in Redis's blocking migration API and transforming it into an asynchronous, scalable operation.

## Conferences & Presentations

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### AAAI 2025 Fall Symposium Series

November 2025

*Presenter*

*Arlington, Virginia, USA*

- Will present the short paper “Towards Fairer AI: Multi-Agent Debiasing of LLMs with Online Evidence Retrieval”.

### Tapia Conference 2025

September 2025

*Attendee*

*Dallas, Texas, USA*

- Participated in workshops, career fairs, and represented Virginia Tech at the graduate school fair.

## Academic Service

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### ACM SIGCOMM 2025

*Artifact Evaluator*

- Reviewed research artifacts for reproducibility, correctness, and completeness. ([🔗 Details](#))

### ACM Computing Surveys (CSUR) 2025

*Reviewer*

- Reviewed a manuscript for ACM Computing Surveys, a leading journal in computer science.

## Teaching Experience

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### Virginia Tech

August 2024 – Present

*Graduate Teaching Assistant*

*Blacksburg, VA, USA*

- CS 5740 AI Tools for Software Engineering (current), CS 3114 Data Structures & Algorithms

### LUMS

August 2022 – May 2024

*Undergraduate Teaching Assistant*

*Lahore, Pakistan*

- CS 473 Network Security, CS 582 Distributed Systems, CS 535 Machine Learning, CS 210 Discrete Mathematics, CS 100 Computational Problem Solving

## Professional Experience

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### Analytics 4 Everyone

June 2025 – August 2025

*Software Engineering Intern*

*Pittsburgh, PA*

- Developed full-stack features using React and Django, with PostgreSQL as the database backend, for an AI-powered education platform designed to scale for 10,000+ concurrent users and 1M+ total users.
- Created an automated data pipeline with task scheduling and GCP Bucket integration for scalable storage.

### Educative Inc.

June 2023 – August 2023

*Technical Content Engineering Intern*

*Lahore, Pakistan*

- Authored 60+ technical articles on software engineering and applied mathematics, published on the Educative platform and optimized for discoverability through SEO best practices. ([🔗 Educative Article Publications](#))
- Implemented Docker based workflows to support Educative’s embedded code runner, enabling users to execute interactive code examples directly within the articles.

## Honors & Awards

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- Received the SIGCOMM 2025 Best Student Paper Award.
- Awarded \$1,500 CCI Commonwealth Cyber Initiative Grant (2024–2025) to support conference travel and academic development, recognized as a Cyber Innovation Scholar.
- Awarded the LUMS Merit Scholarship, granted to the top 15 students in the batch with the highest academic standing.
- Placed on the LUMS Dean’s Honor List (2020–2024).

## Technical Skills

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**Languages:** Python, JavaScript, TypeScript, C++, C, C#, Go

**Cloud Infrastructure:** Google Cloud Platform, AWS, Azure

**Frontend Frameworks:** React, React Native, Angular

**Backend Frameworks:** Node.js, Django, FastAPI, Flask, Spark

**Databases:** MySQL, MongoDB, Postgres, Firebase

**DevOps (CI/CD):** Git, Docker, Kubernetes, Jira