

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

Edge Caching as Differentiation

ACM SIGCOMM 2025

September 2025

Coimbra, Portugal

- Muhammad Abdullah, Mughees Ur Rehman, Pavlos Nikolopoulos, Katerina Argyraki.
- 📄 Paper
- Best Student Paper Award

Source Code Hotspots: A Diagnostic Method for Quality Issues

ACM MSR 2026

April 2026

Rio de Janeiro, Brazil

- Saleha Muzammil, Mughees Ur Rehman, Zoe Kotti, Diomidis Spinellis.
- 📄 Conference Program

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.

Research Experience

Data Security and Privacy Lab, Virginia Tech

Research Associate

September 2024 – Present

Blacksburg, VA, USA

- Conducting research with Prof. Murat Kantarcioglu on using LLMs to improve network security by automatically generating and evaluating Suricata intrusion detection rules.
- Analyzed malware samples from VirusTotal in the Cuckoo sandbox to collect PCAPs and study the Suricata alerts associated with each sample.
- Converted PCAPs into flow-level representations, embedded flows using a Doc2Vec model, and trained an autoencoder to separate malicious flows from benign traffic.
- Developed an LLM-based framework that uses malicious flow features to generate and verify Suricata rules, enabling adaptive intrusion detection for zero-day threats.

EPFL

May 2024 – August 2024

Research Intern

Lausanne, Switzerland

- Worked under the supervision of Prof. Katerina Argyraki at the Network Architecture Lab (NAL), investigating how edge caching affects Internet fairness and neutrality across major CDN providers.
- Developed Selenium-based crawlers in Python, deployed on AWS EC2 instances across multiple regions, to measure cache hit rates and latency across 25+ streaming services.
- Analyzed disparities in cache performance within CDNs and showed how such variations can lead to QoE differences and traffic prioritization among competing content providers.
- Co-authored the paper [Edge Caching as Differentiation](#), published at [ACM SIGCOMM 2025](#)(Best Student Paper Award).

Networks and Systems Group LUMS

June 2022 – May 2024

Research Associate

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.

Professional Experience

Analytics 4 Everyone

Software Engineering Intern

June 2025 – August 2025

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.

Teaching Experience

Virginia Tech

August 2024 – Present

Graduate Teaching Assistant

Blacksburg, VA, USA

- CS 2114 Software Design & Data Structures (current), CS 5740 AI Tools for Software Engineering, CS 3114 Data Structures & Algorithms

LUMS

August 2022 – May 2024

Undergraduate Teaching Assistant

Lahore, Pakistan

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

Honors & Awards

- 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.
- Recipient of a full scholarship to attend the Richard Tapia Conference 2025.
- 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).

Academic Service

Artifact Evaluator

- USENIX Security 2026 ([🔗 Details](#))
- ACM SIGCOMM 2025 ([🔗 Details](#))

Reviewer

- ACM Computing Surveys (CSUR) 2025

Conferences & Presentations

AAAI 2025 Fall Symposium Series

November 2025

Presenter

Arlington, VA, USA

- Presented the short paper "Towards Fairer AI: Multi-Agent Debiasing of LLMs with Online Evidence Retrieval".

Tapia Conference 2025

September 2025

Attendee

Dallas, TX, USA

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

Technical Skills

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