Mughees Ur Rehman

Blacksburg, VA | 540-934-8608 | mughees@vt.edu | linkedin.com/in/mughees-ur-rehman |
github.com/mughees-urrehman | mughees-urrehman.github.io | Google Scholar

Education

Virginia Tech **August 2024 – May 2026**
Masters in Computer Science *Blacksburg, VA, USA*
Cumulative GPA: 4.00/4.00

Lahore University of Management Sciences (LUMS) **September 2020 – June 2024**
Bachelors in Computer Science *Lahore, Pakistan*
Cumulative GPA: 3.97/4.00

Publications

Edge Caching as Differentiation **September 2025**
ACM SIGCOMM 2025 *Coimbra, Portugal*

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

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 **September 2024 – Present**
Research Associate *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 malware network traffic, identifying family specific communication and evasion patterns.
- Designing LLM-based frameworks for generating and validating Suricata detection rules from network traffic, with the goal of generating rules for zero-day malware and improving adaptive intrusion detection.

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 **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.

Teaching Experience

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 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