Mughees Ur Rehman

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EDUCATION

Virginia Tech   Blacksburg, VA
Master of Science in Computer Science and Applications | CGPA: 4.00/4.00   August 2024 – May 2026
- **Coursework**: Advanced Topics in Data & Information, System and Software Security, Large Scale Distributed Systems, Machine Learning, Network Architecture and Protocols

Lahore University of Management Sciences (LUMS)   Lahore, Pakistan
Bachelor of Science in Computer Science | CGPA: 3.97/4.00   September 2020 – May 2024
- **Coursework:** Distributed Systems, Deep Learning, Computer Vision, Network Security, Software Engineering

PROFESSIONAL EXPERIENCE

Analytics 4 Everyone   Pittsburgh, PA
Software Engineering Intern   June 2025 – August 2025
- 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.

Virginia Tech   Blacksburg, VA
Graduate Teaching Assistant   August 2024 – Present
- Instructed the courses *AI Tools for Software Engineering* and *Data Structures*, supporting instruction on using **LLMs** in software development, building custom AI bots, **RAG** pipelines, and core data structures.
- Guided **50+** student projects on code generation, prompt engineering, and algorithm development with LLMs.

EPFL   Lausanne, Switzerland
Research Intern   May 2024 – August 2024
- Worked at Network Architecture Lab, developing Selenium web crawlers in **Python** on **AWS EC2** instances to scrape **25+** streaming sites, collecting hit rate and latency data to analyse CDN performance.
- Analyzed video streaming data to quantify edge caching's impact on QoE, revealing hit rate disparities up to **100%** vs. **30%** for platforms using the same cache provider.
- Co-authored the paper Edge Caching as Differentiation, published at the **ACM SIGCOMM 2025** conference.

Educative   Lahore, Pakistan
Technical Content Engineering Intern   June 2023 – August 2023
- Authored **60+** technical articles on software engineering and applied mathematics, published on the Educative platform, optimized for discoverability through SEO best practices.
- Implemented **Docker** based workflows to support Educative's embedded code runner, enabling users to execute interactive code examples directly within the articles.

PROJECTS

EnergyMonitor | JavaScript, React Native, MongoDB, Expo
- Developed a mobile app to track real-time household electricity usage with intuitive dashboards and analytics.
- Promoted eco-friendly energy management & reduced overall consumption by **35%** across **500+** appliances.

Towards Fairer AI: Multi-Agent Debiasing of LLMs with Online Evidence Retrieval | Python, LLMs, RAG
- Designed and implemented MADERA, a multi-agent framework that detects and mitigates social bias in LLM reasoning, using GPT-4, Claude-3 Haiku, and DeepSeek-R1 backbones.
- Reduced GPT-4's reasoning bias score from -**0.29** to -**0.04** and boosted accuracy from **71%** to **96%** on the BBQ-Hard benchmark by integrating a search agent for evidence retrieval, surpassing baselines.
- Published findings at the AAAI Fall Symposium 2025 conference.

RetiScan **|** PyTorch, Flask, React, Firebase, OpenAI
- Initiated a federated learning system for retinal vessel segmentation and diabetic retinopathy detection.
- Achieved a **78%** improvement in segmentation accuracy compared to baseline models, enhancing reliability.

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, Ansible, Metaflow, Jira

LEADERSHIP AND VOLUNTEER ROLES

CS Mentor at *Virginia Tech*   August 2025 – Present
- Guided incoming graduate students by offering support and resources for a smooth program transition