ROHAIL ASIM

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SUMMARY

Applied systems researcher and engineer specializing in AI-powered networking, real-time systems, and web performance. I build scalable, latency-sensitive infrastructure ranging from 5G rate control protocols to ML-driven web optimizations grounded in rigorous experimentation, open-source tooling, large-scale data analysis, and real-world deployments in resource-constrained environments.

EDUCATION

New York University Sep 2020 - Aug 2025
PhD in Computer Science - CGPA: 3.92/4.0
Relevant Coursework: Advanced Algorithms, Artificial Intelligence, Databases, Distributed Systems, Computer Graphics

Lahore University of Management Science (LUMS) 2015 - 2019
*Bachelor of Computer Science - CGPA: 3.70/4.0 (*Graduated with Distinction*)*
Relevant Coursework: Network Centric Computing, Distributed Systems, Advanced Programming, Artificial Intelligence

EXPERIENCE

Graduate Research Assistant Sep 2020 - Present
New York University Abu Dhabi *Abu Dhabi, UAE*
AI & Networked Systems

- Designed and implemented **Hera**, a modular QoE-aware rate control framework for AR/VR applications in 5G networks, integrating a custom TCP Linux kernel module in C with WebXR-based multi-user environments to reduce interaction latency by up to 66%, improve video quality by 50% average bitrate
- Developed **Zeus**, a novel benchmarking framework for evaluating congestion control algorithms (CCAs) in 5G environments and led the most comprehensive cross-protocol measurement study to date across 5G environments using Python, Mahimahi, and NS-3 for repeatable, scenario-aware analysis
- Developed **Sonic**, a novel connectivity system leveraging FM radio and SMS to deliver simplified, pre-rendered web content to low-end mobile devices in internet-deprived regions
- Developed **Lite-Web**, a hybrid JavaScript optimization framework combining machine learning (ML) and rule-based analysis to reduce nonessential scripts, achieving up to 72% reduction in page load time and 54% reduction in JavaScript processing on low-end phones in underserved regions
- Implemented a multi-agent Reinforcement Learning (RL) framework enabling autonomous vehicles to learn socially optimal routing strategies, achieving up to 30% lower average travel time and 50% fairer congestion distribution

AI & Sustainability

- Conducted a comprehensive study on the impact of generative AI on educational institutions, evaluating GenAI's performance in 32 university courses using bootstrapped Welch's t-tests and OLS regression, and exposing the unreliability of AI-detection tools through adversarial obfuscation attacks, with findings featured in major media outlets worldwide
- Developed a modular Sustainability Calculator in Python to estimate carbon emissions of AI infrastructure, incorporating grid emission data and datacenter energy profiles and using scenario-based simulations to evaluate offsetting strategies

Software Engineer (Full Stack) Jan 2020 - Aug 2020
Educative Inc. *Lahore, PAK*
Educative is an ed-tech platform with over 2 million users that provides interactive and adaptive courses for software developers

- Migrated platform to Next.js to utilize server-side rendering (SSR) and client-side caching to improve SEO and reduce page load times up to 50%
- Created a Design System using Material-UI in TypeScript saving up to 50% of a developer's time to build UI components
- Increased test coverage by 50% using a testing infrastructure based on Jest, Unittest, and Selenium

RESEARCH PROJECTS

[1] **The GAIUS Experience: Powering a Hyperlocal Mobile Web for Communities in Emerging Regions**
ACM ICTD 2024

[2] **SONIC: Connect the Unconnected via FM Radio & SMS**
ACM CoNEXT '24

[3] **Impact of Congestion Control on Mixed Reality Applications**
ACM SIGCOMM EMS 2024

[4] **I tag, you tag, everybody tags!**
ACM Internet Measurement Conference (IMC) 2023

[5] **Perception, performance, and detectability of conversational artificial intelligence across 32 university courses**
Scientific Reports 2023

[6] **Rethinking homework in the age of artificial intelligence**
IEEE Intelligent Systems

[7] **Towards a world wide web without digital inequality**
Proceedings of the National Academy of Sciences (PNAS)

[8] **ALCC: Migrating Congestion Control To The Application Layer In Cellular Networks**
Journal of Systems Research

[9] **Towards Next Generation Immersive Applications in 5G Environments**
Under Review

[10] **The Quest for the Best: Evaluating Congestion Control in 5G**
Under Review

[11] **Is AI Really Becoming Green?**
Under Review

[12] **Modeling Economic Viability for Scalable AI Deployment in Emerging Regions**
Under Review

HONORS & AWARDS

NYU Global PhD Fellowship 2020 – 2025
Dean's Honor List Academic Years 2017–2018, 2018–2019
Graduated with Distinction 2019

TECHNOLOGIES

Languages	Python, C, C++, JavaScript, TypeScript, GoLang, HTML, CSS, Matlab, SQL, Haskell
Tools & Frameworks	Wireshark, Linux, Git, Bash, Selenium, NGINX, NetEm, Mahimahi, Pandas, Numpy, Matplotlib