

# SYED MUHAMMAD ALI NAWAZISH

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## EDUCATION

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### University of Utah

August 2022 - Present

Ph.D. in Computer Science

*Advisor(s)*: Dr. Jacobus (Kobus) Van der Merwe

### Lahore University of Management Sciences (LUMS)

September 2018 - July 2020

Masters in Computer Science

*Advisor(s)*: Dr. Zafar Ayyub Qazi and Dr. Taqi Raza

### COMSATS, Lahore

February 2013 - June 2017

Bachelors in Software Engineering

*Advisor(s)*: Dr. Salman Khan

## PUBLICATIONS

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- **Enabling Emerging Edge Applications Through a 5G Control Plane Intervention**  
Mukhtiar Ahmad, **Muhammad Ali Nawazish**, Muhammad Taimoor Tariq, Muhammad Basit Iqbal Awan, Dr. Taqi Raza, Dr. Zafar Ayyub Qazi  
ACM CoNEXT 2022 (accept. rate = 19%)  
[Source code]
- **Neutrino: A Fast and Consistent Edge-based Cellular Control Plane**  
Mukhtiar Ahmad, **Muhammad Ali Nawazish**, Muhammad Taimoor Tariq, Syed Usman Jafri, Adnan Abbas, Syeda Mashal Abbas Zaidi, Muhammad Basit Iqbal Awan, Zartash Afzal Uzmi, Zafar Ayyub Qazi  
IEEE/ACM Transactions on Networking journal
- **A Low Latency and Consistent Cellular Control Plane**  
Mukhtiar Ahmad, Syed Usman Jafri, Azam Ikram, Wasiq Noor Ahmad Qasmi, **Muhammad Ali Nawazish**, Zartash Uzmi, and Zafar Ayyub Qazi  
ACM SIGCOMM 2020 (accept. rate = 22%)  
[Source code]
- **Fast EPC: A Low Latency Cellular Control Plane**  
Mukhtiar Ahmad, Wasiq Noor Ahmad Qasmi, Syed Usman Jafri, Ridah Naseem, **Muhammad Ali Nawazish**, Muhammed Azam Ikram, Zartash Uzmi, and Zafar Ayyub Qazi  
ACM SIGCOMM 2019 (Poster session)

## PROFESSIONAL EXPERIENCE

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### Nokia Bell Labs, Murray Hill

June 2024 - August 2024

*Research Intern*

- Worked on co-optimizing RAN resources and edge server parameters to improve connectivity for next-generation mobile applications.

### Zong Research Lab - LUMS

July 2020 - July 2022

*Research Assistant*

- Designed and developed a machine learning-based system to detect control-plane attacks in 5G core network.

- Designed and developed a novel 5G core network to improve control-plane latency under failures by **3.8x**.
- Designed and developed a geo-aware load balancer that reduces the handover completion times by **17x** in the 5G control-plane.

## **Zong Research Lab - LUMS**

February 2019 - June 2020

### *Research Assistant*

- Performed serialization of 5G NAS procedures with **ASN.1** and **Flatbuffers** schemes and compared their encoding/decoding times.
- Designed a fast packet processing system leveraging **Intel's fifth generation** user plane function and improved the user-perceived latencies by up to **10x**.

## **COMSATS, Lahore**

October 2017 - August 2018

### *Software Engineer*

- Designed and developed a **plagiarism detection** module for university assignments using a novel **string matching** algorithm.
- Designed and developed a **graph-based semantic similarity** for finding structural similarity of C/C++ source codes using **Clang** compiler APIs.

## **PROJECTS**

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- **Computation Offloading:** Conducted a feasibility study of computation offloading of multiple IoT applications under **Edge computing** paradigm.
- **Panorama Generator:** Developed an Android and web-based solution for panoramic pictures creation using Computer vision concepts.
- **Bitcoin Miner:** Developed a distributed system that mimics the **Bitcoin's** mining algorithm.
- **Paxos:** Developed a fault-tolerant, distributed algorithm for reaching consensus using Golang.
- **OLAP Cube:** Created an approach for multi-dimensional data analysis using a Java-based automatic query builder.
- **High-performance numerical library:** Developed a high-performance matrix multiplication library for multi-core CPU and GPU using OpenMP and CUDA, respectively.

## **TEACHING ASSISTANTSHIPS**

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- Computer Networks (CS 4480), University of Utah Spring, 2023

## **AWARDS**

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- Received **Outstanding Innovation Award** at Nokia Bell Labs for the internship project.
- Awarded AERPAW 2023 workshop student travel support. Link to the workshop: <https://aerpaw.org/>
- Awarded departmental Fellowship at the University of Utah.

## **SERVICE**

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- Participated in DICE competition at COMSATS Sahiwal, 2016
- Participated in DICE competition at COMSATS Lahore, 2017