Mubashir Anwar

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Education

Lahore University of Management Sciences Sept. 2017 – May 2021

Bachelor of Science in Computer Science *CGPA: 3.99/4.00*

- **Ranked 1st/140 in CS**
- Graduate Level Courses: Topics in Computer and Security, Applied Probability, Machine Learning, Privacy in the Digital Age
- Selected Undergraduate Level Courses: Network Security (ranked 1st/98), Operating Systems (ranked 1st/114), Fundamentals of Computer Systems (ranked 1st/167), Data Structures (ranked 1st/161), Algorithms (ranked 1st/146), Advanced Programming (ranked 1st/156), Discrete Mathematics, Data Science

Research Experience

Failure Resilience for Software-Defined Networks June 2020 – Present

- Advisor: Dr. Matthew Caesar (UIUC)
- Designed and implemented a strategy for transparently installing customizable, multi-link failure resilient backup paths in SDNs on a layer between the control and the data plane
- Wrote 2000+ lines of code, which included crafting and modifying OpenFlow messages to install backup paths and hide their existence from the controller
- Identified and fixed network black holes and loops, thread synchronization issues, and transparency problems in the previous system
- Evaluated performance and overhead of the system on RYU and ONOS controllers through Mininet on multiple network topologies
- Contributed in the writing of a research paper on the project - intended submission in DSN 2021

DeepFakes Detection - Perceptual Differences Between Humans and Machines August 2020 – Present

- Advisors: Dr. Fareed Zaffar (Internet Security & Privacy Lab, LUMS) and Dr. Rashid Tahir (University of Prince Mugrin)
- Helped in the design of experiments to record human perception of DeepFakes and to train people in spotting fake videos through insights learned from automatic detection tools
- Integrated an eye tracking library on our website for an online survey
- Analyzed experimental data from 140+ participants from two surveys and visualized eye-gaze data across multiple participants through superimposed heatmaps
- Wrote the initial draft and contributed to the final version of the conference paper - currently in review for CHI 2021

Device Aware Adaptive Video Streaming June 2019 – July 2019

- Advisors: Dr. Ihsan Ayyub Qazi (Networks & Systems Group, LUMS)
- Summer research internship on a project for measuring the impact of device level bottlenecks on QoE of video streaming on low-end mobile devices and extending adaptive bitrate streaming algorithms to consider memory pressure in bitrate selection process
- Automated measurements of FPS, CPU, and memory usage of android mobiles to make data collection on device-level bottlenecks during video streaming quicker
- Conducted experiments to measure the impact of battery-saver mode of different android mobiles on video streaming under memory pressure

Teaching Experience

Teaching Assistant - Operating Systems Sept 2020 – Dec 2020

- Made assignments and quizzes, conducted tutorials, held office hours, and graded different instruments of a class of 140 students

Teaching Assistant - Fundamentals of Computer Systems Sept 2019 – Dec 2019

- Conducted tutorials, held office hours, helped in making quizzes, and graded different instruments of a class of 130 students

Project for Uplifting LUMS Support Staff Sept 2018 – May 2019

- Taught English and Mathematics to 20 support staff members twice a week

Selected Projects

Tripaze | JavaScript React Firebase — January 2020 – May 2020

- Managed and worked with a group of 5 in the specification, design, implementation, and testing of a web application to serve as a market place for local trips

P2P File Sharing Network | Node.js — March 2019

- Created a P2P, node-failure resilient file sharing service built on top of a Distributed Hash Table

Virtual Memory Manager | C — December 2019

- Implemented a two-level paging scheme with page fault handling along with binary instruction translation and execution

Yet Another Programming Language | Python — May 2020

- Implemented a lexer, parser, and interpreter for a custom made programming language

Analysis of Adult Census Income | Python — Oct 2019 - Dec 2019

- Performed detailed Exploratory Data Analysis on an Adult Census Income data set and achieved an accuracy of 87% on income predictions

Additional Experience and Awards

Massive Open Online Courses (MOOCs) — 2012 – Present

- Machine Learning (Coursera), Algorithms I (Coursera), Introduction to Systematic Program Design I (Coursera), CS50 (edx), Introduction to Java (Udacity), Learning How To Learn (Coursera)

Merit Scholarship – LUMS — Sept 2018 – May 2021

- Awarded to top 3 students in the batch each year

Head Boy – Student Council — Sept 2016 – May 2017

- Lead a team of 8 council members to organize school events, manage sports activities, and voice student body concerns
- Established a Peer Support System to guide junior batches by linking them to senior students

Technical Skills

Languages: Python, C/C++, SQL, JavaScript
Frameworks: React, Node.js, Django
Libraries: NumPy, Matplotlib, pandas, GazeCloud API