

# Muhammad Anas Imtiaz

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## EDUCATION

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**Boston University** | Boston, MA Expected 2022

*Ph.D. in Computer Engineering*

- Advisor: David Starobinski

**National University of Computer & Emerging Sciences** | Lahore, Pakistan Spring 2014

*B.Sc. in Electrical (Computer) Engineering*

- Advisor: Omer Saleem Bhatti

## ACADEMIC RESEARCH AND PROJECTS

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**Boston University** | Boston, MA September 2017 – present

*Doctoral Research Fellow, Laboratory of Networking & Information Systems (NISLab)*

Project: Measuring and improving the performance of the Bitcoin network

Relevant publications: [C1], [C2], [A1], [A2]

- Investigated presence and impact of churn in the Bitcoin network
- Collected data from Bitcoin blockchain crawler showing 97% nodes experience churn; fitted best model to data; performed live measurements on Bitcoin network
- Showed that performance of current protocol degrades in presence of churn
- Designed, implemented, and evaluated a novel synchronization scheme to mitigate effects of churn
- Studied characteristics of orphan transactions in the Bitcoin network
- Measured network overhead incurred by a node in network, configured with default parameters, due to orphan transactions
- Observed network overhead with a variation of parameter values and suggested a simple fix resulting in least overhead

**National University of Computer & Emerging Sciences** | Lahore, Pakistan August, 2013 – August, 2014

Project: Handroid: A glove interface to sense hand gestures for sign language vocalization and control of robotic hand

Relevant publications: [A3], [A5]

- Constructed a glove interface to detect human motion when worn
- Designed specifically for deaf/mute people relying on sign language for communication
- Devised and effected an algorithm to convert sign language to audio and text
- Replicated human hand motion on a robotic hand through a machine-control system
- Won several competitions, awards and National ICT R&D fund
- Responsible for software programming and development
- Facilitated procurement of hardware, i.e., sensors, controllers, actuators
- Managed project finances to ensure satisfactory cost of project

## PROFESSIONAL EXPERIENCE

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**Boston University** | Boston, MA September 2018 – December 2018 and January 2019 – May 2019

*Graduate Teaching Assistant*

- Assisted professors in course “Applied algorithms for engineers”
- Created and graded homework solutions
- Held discussion sessions and office hours
- Managed undergraduate teaching assistants
- Resolved administrative and student-related issues

**Mentor Graphics (now Siemens EDA) | Lahore, Pakistan**

August 2016 – July 2017

*Senior Software Development Engineer*

- Implemented development and testing of Microcontroller Abstraction Layer for the Input Capture Unit module under the AUTOSAR architecture
- Developed ICU's configurations and helped with configuration generator development and testing

**Mentor Graphics (now Siemens EDA) | Lahore, Pakistan**

December 2014 – July 2016

*Software Development Engineer*

- Developed several Mentor legacy network stacks including 'Volcano Target Package' and 'LIN Target Package'
- Upgraded and maintained CAN and LIN network protocol stacks
- Developed configuration generation tool and tests for CAN and LIN controller drivers for different microcontroller architectures
- Performed AUTOSAR Diagnostics over IP modules' test enhancement and development by identifying cases to increase code coverage
- Created several automation scripts for various tasks such as building tests, interacting with version control tools, and more using Windows BATCH, UNIX Shell and Python scripting languages
- Performed debugging with different tools such as Lauterbach, CubeSuite+, CodeWarrior, & more
- Provided customer support regarding service requests and maintenance

## **AWARDS AND HONORS**

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- *Best Paper Award*, IEEE ICBC'20
- ACM SIG *travel grant* to attend ACM IMC'19
- ACM SIG *travel grant* to attend in-person shadow PC meeting of ACM IMC'19
- Graduated *cum laude*, with a *silver medal* and appearance on the Dean's list throughout undergrad

## **PUBLICATIONS**

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### **Conferences**

- [C1] Imtiaz, Muhammad Anas, et al. "Characterizing Orphan Transactions in the Bitcoin Network." *2020 IEEE International Conference on Blockchain and Cryptocurrency (ICBC)*, Toronto, Canada, 2020.
- [C2] Imtiaz, Muhammad Anas, et al. "Churn in the Bitcoin Network: Characterization and Impact." *2019 IEEE International Conference on Blockchain and Cryptocurrency (ICBC)*, Seoul, Korea (South), 2019.

### **Journals**

- [A1] [Accepted for publication] Imtiaz, Muhammad Anas, et al. "Investigating Orphan Transactions in the Bitcoin Network." *IEEE Transactions on Network and Service Management* (2021).
- [A2] [Accepted for publication] Imtiaz, Muhammad Anas, et al. "Churn in the Bitcoin Network." *IEEE Transactions on Network and Service Management* (2021).
- [A3] Bhatti, Omer Saleem, et al. "Adaptive Collaborative Position Control of a Tendon-Driven Robotic Finger." *Journal of Control Engineering and Applied Informatics (CEAI)* 20.2 (2018): 87-99.
- [A4] Bhatti, Omer Saleem, et al. "Attitude control and stabilization of a two-wheeled self-balancing robot." *Journal of Control Engineering and Applied Informatics (CEAI)* 17.3 (2015): 98-104.
- [A5] Nisar, Osama, et al. "Performance Optimization of a Flex Sensor Based Glove for Hand Gestures Recognition and Translation." *International Journal of Engineering Research and Technology (IJERT)* 3.5 (2014).

### **Posters**

- [P1] Imtiaz, Muhammad Anas, et al. "Churn in the Bitcoin Network." *5<sup>th</sup> New England Network and Systems (NENS) Day (NENS'19)*, Cambridge, MA, USA, 2019.
- [P2] Imtiaz, Muhammad Anas, et al. "Measuring Bitcoin's resilience to churn." *2018 ACM Internet Measurement Conference (IMC'18)*, Boston, MA, USA, 2018.

## LEADERSHIP

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**Boston University ECE Graduate Student Association** | Boston, MA

February 2020 – present

- Secretary and Web administrator
- Helped organize various events including several Ph.D. town halls to facilitate communication between students and administration, and an alumni panel directed towards helping students apply for jobs after graduation

## SKILLS

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*Programming:* C/C++, Python, Matlab

*Computer:* MS-Office (Word, Excel, Powerpoint), Git, Windows, Unix

*Language:* English (*proficient*), Urdu (*proficient*), Punjabi (*good*)

## ACADEMIC SERVICES

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- Served as *reviewer* for IEEE TNSM
- Served as *shadow PC* for ACM IMC'19

## HOBBIES

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- Travelling and photography [🔗](#)
- Occasionally contribute to Math.StackExchange [🔗](#)