

# Salem Alqahtani

<https://salemmohammed.github.io/webpage/>

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## Education

**State University of New York at Buffalo** . . . . . Buffalo, NY.

Ph.D. in Computer Science and Engineering . . . . . 2022

Thesis title: *Analyzing and improving performance in BFT consensus protocols*

Advisor: [Murat Demirbas](#)

**University of Connecticut** . . . . . Storrs, CT.

M.S. in Computer Science and Engineering . . . . . 2015

Advisor: [Reda Ammar](#)

**King Khalid University** . . . . . ABHA, KSA

B.S. in Computer Science . . . . . 2010

Advisor: [Babusundar Sankaran](#)

## Working Experience

**State University of New York at Buffalo** . . . . . Buffalo, NY.

Post-doctorate in Computer Science and Engineering . . . . . 2022-Present

*Distributed Database*. Advisor: [Haonan Lu](#)

## Research Interests

My research interests are in distributed systems, distributed database systems, and Blockchain. I focus on analyzing, designing, and implementing large-scale replication and transactional protocols. I proposed and evaluated new solutions for addressing scalability limitations in both BFT and distributed transaction protocols.

## Professional Experience

**22-present Research Assistant** . . . . . State University of New York at Buffalo, Buffalo, NY

Advisors: Haonan lu

- Design a smart ordering layer to improve concurrency control performance in distributed databases.

**2017-2022 Research Assistant** . . . . . State University of New York at Buffalo, Buffalo, NY

Advisors: Murat Demirbas

- Led a project that designed a new BFT protocol called BunchBFT for better performance in Geo-Distributed settings, which was submitted to GLOBECOM'22.
- Led a project that designed a new BFT protocol called BigBFT for high throughput, which resulted in a publication in IEEE-IPCCC '21.
- Led a project that fundamentally studied the bottleneck in Blockchain protocols

and designed an implementation framework called PaxiBFT for system evaluation, which resulted in a publication in IEEE-COINS '21.

- Led a project that studied and evaluated the communication topologies in machine learning systems, which resulted in a publication in IEEE-ICCCN '19
- Collaborated on a project that studied and evaluated machine learning systems, which resulted in a publication in IEEE-ICCCN '17

## Conference Publications

- [1] **Salem Alqahtani** , Murat Demirbas. BunchBFT: Across-Cluster Consensus Protocol. **Under Review**.
- [2] **Salem Alqahtani** , Murat Demirbas. BigBFT: A Multileader Byzantine Fault Tolerance Protocol for High Throughput. 40th IEEE International Performance, Computing, and Communications Conference (**IPCCC**), **2021**.
- [3] **Salem Alqahtani** , Murat Demirbas. Bottlenecks in Blockchain Consensus Protocols. IEEE International Conference on Omni-Layer Intelligent Systems (**COINS**), **2021**.
- [4] **Salem Alqahtani** , Murat Demirbas. Performance Analysis and Comparison of Distributed Machine Learning Systems. The 28th International Conference on Computer Communication and Networks (**ICCCN**), **2019**.
- [5] Kuo Zhang, **Salem Alqahtani** , Murat Demirbas. A Comparison of Distributed Machine Learning Platforms. The 26th International Conference on Computer Communication and Networks (**ICCCN**), **2017**.

## Ph.D. Thesis

- [6] **Salem Alqahtani**. Analyzing and improving performance in BFT consensus protocols.

## Teaching Experience

### State University of New York at Buffalo, Buffalo, NY

- Large-scale distributed systems, Undergraduate and Graduate Course, Summer'23 (Instructor).

### King Khalid University, Abha, KSA

- Introduction to computer science and data structure in JAVA, Undergraduate Course, Fall10, Spring11, Fall11, and Spring12 (Instructor, 200 students).

## Service

2017-2019     Organizer, treasurer, and student club president at the SUNY-Buffalo.

## Honors

2010            Second-degree Honor from King Khalid University.

## Conference Presentations

- 08/26/2021    IEEE International Conference on Omni-Layer Intelligent Systems (**COINS**)  
Bottlenecks in Blockchain Consensus Protocols, **Blockchain Session**, Spain.
- 10/28/2021    40th IEEE International Performance, Computing, and Communications(**IPCCC**)  
BigBFT: A Multileader Byzantine Fault Tolerance Protocol for High Throughput,  
**Blockchain Session**, Texas, USA.