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

I am primarily interested in the field of distributed systems, Machine learning Systems, distributed database systems, and blockchain technology. My focus is on analyzing, designing, and implementing large-scale replication and transactional protocols. To overcome scalability limitations in both BFT and distributed transaction protocols, I have proposed and evaluated innovative solutions.

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.