Faria Kalim

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Interests

Distributed systems

Employment

Systems Software Engineer, Apple Inc **07/2020 — present**

- Implementing software for a variety of scalable, reliable, and secure distributed computing systems for Apple's internal engineering teams.
- Design, implement, and debug core components of internal distributed computing services
- Research and implement key technologies, architectures, and standards
- Work with other engineering teams to ensure that services meet scalability, availability, security, and performance goals

Education

Ph.D., Computer Science **08/2015 — 07/2020**
University of Illinois at Urbana-Champaign (UIUC), USA

- Sohaib and Sara Abbasi Fellow **08/2015 — 07/2020**
- Advisor: Prof. Indranil Gupta

M.S. alongside Ph.D., Computer Science **08/2015 — 12/2017**
University of Illinois at Urbana-Champaign (UIUC), USA

B.E., Computer Science **08/2011 — 06/2015**
National University of Sciences & Technology (NUST), Pakistan

- C.GPA: 4.00/4.00; Class Standing: 1/76

Publications

- **Faria Kalim**, Jaehoon Paul Jeong, Muhammad Usman Ilyas, "Crater: A Crowd Sensing Application to Estimate Road Conditions", *IEEE Access 4* (2016): 8317-8326.
- **Faria Kalim**, Le Xu, Sharanya Bathey, Richa Meherwal, Indranil Gupta, "Henge: Intent-driven Multi-Tenant Stream Processing", *Symposium of Cloud Computing* (2018)
- **Faria Kalim**, Thomas Cooper, et al., "Caladrius: A Performance Modelling Service for Distributed Stream Processing Systems", *IEEE International Conference on Data Engineering* (2019)
- **Faria Kalim**, Karl Palmskog, et al., "Kaizen: Building a Performant Blockchain System Verified for Consensus and Integrity", *Formal Methods in Computer-Aided Design*, 2019
- Lalith Suresh, João Loff, **Faria Kalim**, et al., "Building Scalable and Flexible Cluster Managers Using Declarative Programming", *Operating Systems Design and Implementation*, 2020
- **Faria Kalim**, Indranil Gupta, "Meezan: Stream Processing as a Service" *In Preparation for Submission to IC2E 2021*

Posters

- **Faria Kalim** et al., 'Reducing Tail Latencies in Micro-Batch Stream Processing Systems", In *Proceedings of the ACM Symposium on Cloud Computing.* 2017.
- **Faria Kalim**, Shadi Noghabi, Shiv Verma, 'To Edge or Not to Edge?", In *Proceedings of the ACM Symposium on Cloud Computing.* 2017.

Tech Reports

- **Faria Kalim**, Shadi Noghabi., 'Bené: On Demand Cost-Effective Scaling at the Edge", *arXiv pre-print:1806.09265*, 2018.

Internships

Research Intern, VMware Research Group **Summer 2019**

- Management planes are hard to build and maintain. The goal of this internship is to automate the synthesis of optimal and highly performant code that performs cluster management.

Software Engineering Intern, Real-Time Compute Team, Twitter **Summer 2018**

- I designed and evaluated the resource management aspects of Caladrius, a system that predicts the future traffic rates of Heron jobs and preemptively scales them to prevent resource bottlenecks.

Research Intern, Cloud Container Operating System Project, IBM Research **Summer 2017**

- Optimized the scheduler in Spark Streaming to prevent load imbalances and mitigate stragglers.

Software Engineering Intern, Site Reliability Engineering Team, Uber **Summer 2016**

- Blackbox is a monitoring system that provided an explicit signal of failed operations witnessed by a user. As Uber must provide 99.99% availability, a difficult challenge was to ensure that the system is 99.995% available—more available than Uber itself—while providing a high signal-to-noise ratio.

Select Honors and Awards

- Certificate in Foundations of Teaching awarded by UIUC CITL **2020**
- Invited to Facebook's Women in Research Lean In Event **2019**
- Recipient of the NSF travel grant to attend ACM SOSP 2019 **2019**
- Invited to attend the Rising Stars in EECS workshop at UIUC **2019**
- Mavis Future Faculty Fellowship awarded by the UIUC College of Engineering **2019 - 2020**
- Sohaib and Sara Abbasi Fellowship awarded by CS@Illinois **2015 – 2020**
- Recipient of travel funding from CS@Illinois to attend the Grace Hopper Conference **2019**
- Outstanding Teaching Assistant Award awarded by CS@Illinois **Fall 2018**
- Recipient of the Usenix Student Grant, ATC 2017 & travel funding for SoCC **2017, 2018**
- Selected to join Tau Beta Pi, the oldest engineering honor society in the US **2015 – present**
- NUST-SEECS Open House Winner in Software Engineering, 2015
- Recipient of President's Gold Medal for academic excellence in undergraduate studies **2015**

Teaching Experience

Instructor

- CS591IG – Distributed Systems Seminar **Spring 2020**

Graduate Teaching Assistant

- CS425 – Distributed Systems **Fall 2017, 2018**
- As Head-TA of the course, I volunteered to teach a short overview of Apache Spark, which was later also included in the Coursera version of the course.

Service

EuroSys 2019 Shadow PC,
External Reviewer: DSN 2019, IEEE Access

Systems and Software Skills

- Programming Languages (in decreasing order of proficiency): Java, C++, Python, Go
- Programming Models: OpenMP, MPI, Android fundamentals
- Frameworks: Apache Storm, Apache Heron, Apache Spark