Seo Jin Park

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Employment (Academic)

Massachusetts Institute of Technology, Cambridge, MA 10/2019 – Current
Postdoctoral associate at Computer Science and Artificial Intelligence Laboratory (CSAIL)
Advisor: Prof. Mohammad Alizadeh

Education

Stanford University, Stanford, CA 09/2013 – 10/2019
Ph.D. in Computer Science
Advisor: Prof. John Ousterhout

Massachusetts Institute of Technology, Cambridge, MA 06/2012 – 06/2013
M.Eng. in Electrical Engineering and Computer Science
Advisor: Prof. Armando Solar-Lezama

Massachusetts Institute of Technology, Cambridge, MA 09/2008 – 06/2013
B.S. in Computer Science and in Mathematics

Research

Areas of interest: distributed systems, systems for machine learning, and low-latency systems.

Vision: The goal of my research is to make cluster-scale parallel systems efficient so that big data applications (e.g., DNN training, analytics) can run 100–1000x faster.

Projects: distributed deep learning system: [3], distributed analytics: [5], blockchain: [4], resource fungibility: [2], low-latency concensus: [9] [6] [8], distributed system consistency: [11], in-memory large-scale storage: [12], server overload control: [1] [7]

Preprints

[1] **Hoover: Overload Control for Applications with Unpredictable Lock Contention**
Inho Cho, Ahmed Saeed, Seo Jin Park, Mohammad Alizadeh and Adam Belay
Submitted to OSDI'22, 2021

[2] **Nu: Achieving Microsecond-Scale Resource Fungibility with Logical Processes**
Zhenyuan Ruan, Seo Jin Park, Marcos K. Aguilera, Adam Belay, and Malte Schwarzkopf
One-shot revision to NSDI'23, 2021

Publications

Published 10 peer-reviewed publications: 1 MLSys, 4 NSDI, 1 OSDI, 1 SOSP, 1 ATC, 1 APNet and 1 TOCS.

[3] **Efficient Strong Scaling Through Burst Parallel Training** [preprint]
Seo Jin Park, Joshua Fried, Sunghyun Kim, Mohammad Alizadeh, and Adam Belay
5th Conference on Machine Learning and Systems (MLSys'22), To appear
Acceptance rate: 20.6%, 51 out of 247.

[4] **DispersedLedger: High-Throughput Byzantine Consensus on Variable Bandwidth Networks** [link]
Lei Yang, Seo Jin Park, Mohammad Alizadeh, Sreeram Kannan, and David Tse
19th USENIX Symposium on Networked Systems Design and Implementation (NSDI'22), To appear
Acceptance rate for spring submissions: 26.9%, 28 out of 104.

[5] **MilliSort and MilliQuery: Large-Scale Data-Intensive Computing in Milliseconds** [link]
Yilong Li*, Seo Jin Park*, and John Ousterhout (*co-first author)
18th USENIX Symposium on Networked Systems Design and Implementation (NSDI'21), April 2021
Acceptance rate for fall submissions: 15.7%, 40 out of 255.

[6] **EPaxos Revisited** [link]
Sarah Tollman, Seo Jin Park, and John Ousterhout
18th USENIX Symposium on Networked Systems Design and Implementation (NSDI'21), April 2021
Acceptance rate for fall submissions: 15.7%, 40 out of 255.

[7] **Overload Control for µs-scale RPCs with Breakwater** [link]
Inho Cho, Ahmed Saeed, Joshua Fried, Seo Jin Park, Mohammad Alizadeh and Adam Belay
14th USENIX Symposium on Operating Systems Design and Implementation (OSDI'20), November 2020
Acceptance rate: 17.6%, 70 out of 398.

[8] **Toward Scalable Replication Systems with Predictable Tails Using Programmable Data Planes** [link]
Sean Choi, Seo Jin Park, Muhammad Shahbaz, Balaji Prabhakar and Mendel Rosenblum
3rd Asia-Pacific Workshop on Networking (APNet'19), August 2019
Acceptance rate: 37.8%, 14 out of 37. (best paper award)

[9] **Exploiting Commutativity For Practical Fast Replication** [link]
Seo Jin Park and John Ousterhout
16th USENIX Symposium on Networked Systems Design and Implementation (NSDI'19), February 2019
Acceptance rate for fall submissions: 12.5%, 30 out of 240.

[10] **NanoLog: A Nanosecond Scale Logging System** [link]
Stephen Yang, Seo Jin Park and John Ousterhout
2018 USENIX Annual Technical Conference (ATC'18), July 2018
Acceptance rate: 20.1%, 76 out of 378.

[11] **Implementing Linearizability at Large Scale and Low Latency** [link]
Collin Lee*, Seo Jin Park*, Ankita Kejriwal, Satoshi Matsushita, and John Ousterhout (*co-first author)
The 25th ACM Symposium on Operating Systems Principles (SOSP'15), October 2015
Acceptance rate: 16.1%, 30 out of 186.

[12] **The RAMCloud Storage System** [link]
John Ousterhout, Arjun Gopalan, Ashish Gupta, Ankita Kejriwal, Collin Lee, Behnam Montazeri, Diego Ongaro, Seo Jin Park, Henry Qin, Mendel Rosenblum, Stephen Rumble, Ryan Stutsman, and Stephen Yang
ACM Transactions on Computer Systems (TOCS) 33, 3, Article 7, August 2015

Industry Experience

Microsoft Research, Redmond, WA 06/2016 — 09/2016
Developed UnifiedStore, a client library layer with a single storage view for hierarchical cloud storage.

Facebook, Menlo Park, CA 07/2014 — 09/2014
Improved performance of service router (from web servers to back-ends) by applying user-level threading.

Facebook, Seattle, WA 07/2013 — 09/2013
Developed a web server to MySQL host router, which provides load balancing, connection pooling, etc.

Oracle, Redwood City, CA 06/2011 — 09/2011
Developed an on demand cloud provisioning model and resource allocation simulator.

Microsoft, Bing, Bellevue, WA 05/2010 — 08/2010
Developed a new service launcher which starts up services on a local machine and enfores resource-use regulations (CPU, RAM, disk IO, and network IO) on each service to decouple interference among services.

KAYAK Software, Concord, MA 01/2010 — 01/2010
Applied machine learning on the hotel review text analysis to categorize hotels.

Teaching and Mentoring

Mentoring

Emma Dauterman, Stanford Undergrad'18	Spring 2018
Sarah Tollman, Stanford Master'20	09/2019 – 06/2020
Inho Cho, MIT PhD	10/2019 – current
Lei Yang, MIT PhD	10/2019 – current
Sunghyun Kim, MIT PhD	11/2020 – current
Joshua Fried, MIT PhD	01/2021 – current

Teaching

Distributed Systems (CS 244b) TA, Stanford University	Fall 2017
Database Systems Principles (CS 245) TA, Stanford University	Winter 2016
Introduction to EECS II: Digital Communication Systems (6.02) Lab Assistant, MIT	Spring 2011

Service

Editorial Board Member, Journal of systems research (JSys), distributed consensus area	2021
Mentoring Diversity Candidates, MIT EECS Graduate Application Assistance Program (GAAP)	2020
Faculty Search Committee, Student member for Stanford CS Dept 2018 Search	2018
MIT Educational Council, Interviewer for MIT undergraduate admissions	2018
Tutoring, Introduction to Algorithms at MIT	2012
Tutoring, Introduction to EECS II: Digital Communication Systems at MIT	2011

Awards

APNet'19 Best Paper Award	2019
Samsung Scholarship, grants $250,000 over five years of graduate study	2013 – 2018
STX Scholarship, grants $200,000 over four years of undergrad study	2008 – 2012

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