Alex Conway

Researcher · Computer Science
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Experience

VMware Research Group — Palo Alto, CA
Researcher — Jun. 2020 - Present

- Leads the SplinterDB project. SplinterDB is a general purpose key-value store built using a new data structure, the size-tiered -tree. SplinterDB is designed for outstanding performance on NVMe and other fast storage hardware, under tough conditions, such as strict memory limits, small key-value pairs and limits on CPU utilization.
- Research into key-value stores, file systems, filters, systems designed for persistent memory and other fast storage, data structures, and memory management.

VMware Research Group — Palo Alto, CA
Research Intern — Jun. 2018 - Jun. 2020

- Designed and implemented SplinterDB, a highly concurrent NVME-optimized key-value store.

Dell EMC — Princeton, NJ
Research Intern — May 2017 - Sep. 2017

- Built a high-performance fingerprint index for deduplicated storage using BOA hash tables, a novel data structure.

Education

Rutgers University — New Brunswick, NJ
Ph.D. in Computer Science — Sept. 2015 - Jun. 2020

- Research under advisor Prof. Martín Farach-Colton.

Princeton University — Princeton, NJ
M.S. in Mathematics — Sept. 2007 - May 2011

Rutgers University — New Brunswick, NJ
B.S. in Mathematics — Sept. 2003 - May 2007

Publications

Conference Papers

SplinterDB: Closing the Bandwidth Gap for NVMe Key-Value Stores — ATC 2020
A. Conway, A. Gupta, V. Chidambaram, M. Farach-Colton, R. Spillane, A. Tai, R. Johnson

How to Copy Files — FAST 2020
Y. Zhan, **A. Conway**, I. Groombridge, Y. Jiao, N. Mukherjee, M. Bender, M. Farach-Colton, W. Jannen, R. Johnson, D. Porter, J. Yuan

Filesystem Aging: It's more Usage than Fullness — HotStorage 2019
A. Conway, E. Knorr, Y. Jiao, M. Bender, W. Jannen, R. Johnson, D. Porter, M. Farach-Colton

Small Refinements to the DAM Can Have Big Consequences for Data-Structure Design — SPAA 2019
M. Bender, **A. Conway**, M. Farach-Colton, W. Jannen, Y. Jiao, R. Johnson, E. Knorr, S. McAllister, N. Mukherjee, P. Pandey, D. Porter, J., Y. Zhan

Optimal Ball Recycling — SODA 2019
M. Bender, J. Christensen, **A. Conway**, M. Farach-Colton, R. Johnson, M. Tsai

Optimal Hashing in External Memory — ICALP, 2018

A. Conway, M. Farach-Colton, P. Shilane

The Full Path to Full-Path Indexing — FAST, 2018

Y. Zhan, Y. Jiao, **A. Conway**, E. Knorr, M. Bender, M. Farach-Colton, B. Jannen, D. Porter, J. Yuan, R. Johnson

File Systems Fated for Senescence? Nonsense, Says Science! — FAST, 2017

A. Conway, A. Bakshi, Y. Jiao, Y. Zhan, M. Bender, W. Jannen, R. Johnson, B Kuszmaul, D. Porter, J Yuan, M. Farach-Colton

The I/O Complexity of Computing Prime Tables — LATIN, 2016

M. Bender, R. Chowdhury, **A. Conway**, M. Farach-Colton, P. Ganapathi, R. Johnson, S. McCauley, B. Simon, S. Singh

Journal Papers

Efficient Directory Mutations in a Full-Path-Indexed File System — TOS, 2018

Y. Zhan, Y. Jiao, D. Porter, **A. Conway**, E. Knorr, M. Farach-Colton, M. Bender, J. Yuan, W. Jannen, R. Johnson

Articles

How to Fragment Your File System — ;login:, 2017

A. Conway, A. Bakshi, Y. Jiao, Y. Zhan, M. Bender, W. Jannen, R. Johnson, B. Kuszmaul, D. Porter, J. Yuan, M. Farach-Colton

Talks

Conference Talks

SplinterDB: Closing the Bandwidth Gap for NVMe Key-Value Stores — Boston, MA, July 2020

ATC

How to Copy Files — Santa Clara, CA, February 2020

FAST

Filesystem Aging: It's more Usage than Fullness — Renton, WA, July 2019

HotStorage

Optimal Ball Recycling — San Diego, CA, January 2019

SODA

Optimal Hashing in External Memory — Prague, CZ, August 2018

ICALP

File Systems Fated for Senescence? Nonsense, Says Science! — Santa Clara, CA, February 2017

FAST

Program Committee Memberships

ALENEX — Alexandria, VA, January 2021