Alex Conway

PhD Candidate · Computer Science

397 2nd St, Apt 4, Jersey City, NJ 07302 USA

conway@ajhconway.com | www.ajhconway.com | ajhconway | Alex Conway

Education

Rutgers University — New Brunswick, NJ

Ph.D. in Computer Science — Sept. 2015 - Present

- Research under advisor Prof. Martín Farach-Colton. Areas of interest include external memory algorithms and storage systems.

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

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

Experience

VMware Research Group

Palo Alto, CA

Research Intern

Jun. 2018 - Present

- Research project with Ittai Abraham, Vijay Chidambaram, Martin Farach-Colton, Rob Johnson and Amy Tai, in collaboration with the vSAN product group.
- Designed and implemented SplinterDB, a highly concurrent NVME-optimized key-value store.
- Uses size-tiered B^ϵ-trees, and the theory of optimal external memory hash tables to achieve theoretic optimality.

Dell EMC

Princeton, NJ

Research Intern

May 2017 - Sep. 2017

- Research project with Philip Shilane.
- Built a high-performance fingerprint index for deduplicated storage using BOA hash tables, a novel data structure.
- Benchmarks show improvement on the insertion performance over standard LSM-tree-based hash tables, such as the one in use in Dell EMC's Datadomain deduplication system, by a factor of 2-10x.

Talks

Conference Talks

Filesystem Aging: It's more Usage than Fullness

Renton, Wa

HotStorage

July 2019

Optimal Ball Recycling

San Diego, CA

SODA

January 2019

Optimal Hashing in External Memory

Prague, CZ

ICALP

August 2018

File Systems Fated for Senescence? Nonsense, Says Science!

Santa Clara, CA

FAST

February 2017