Niv Dayan   Curriculum Vitae

Scalable Storage Engines & Hardware/Software Co-Design & Probabilistic and Write-Optimized Data Structures

CONTACT

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AWARDS

2017 Best of ACM SIGMOD
Our paper on "Monkey: Optimal Navigable Key-value Store" was selected as one of the (4) best papers of the ACM SIGMOD International Conference on Management of Data

2017 ACM SIGMOD Most Reproducible Paper Award

EDUCATION & ACADEMIC EMPLOYMENT

Researcher and System Architect, **Pliops**, Israel	2019 - now
Postdoctoral Researcher, **Harvard**, USA	2015 - 2019
PhD in Computer Science, **IT University of Copenhagen**, Denmark	2012 - 2015
MSc in Software Development, **IT University of Copenhagen**, Denmark	2010 - 2012
BSc in Computing and Economics, **University of Dundee**, Scotland	2007 - 2010

PUBLICATIONS

REFERRED CONFERENCES & JOURNALS

Chucky: Huffman Coded Key-Value Store. Niv Dayan, Moshe Twitto. 2021. — **IN SUBMISSION**

Rosetta: A Robust Space-Time Optimized Range Filter for Key-Value Stores. Siqiang Luo, Subarna Chatterjee, Rafael Ketsetsidis, Niv Dayan, Wilson Qin, Stratos Idreos. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2020. — **SIGMOD 2020**

The Log-Structured Merge-Bush & the Wacky Continuum. Niv Dayan, Stratos Idreos. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2019. — **SIGMOD 2019**

Learning Data Structure Alchemy. Stratos Idreos, Kostas Zoumpatianos, Subarna Chatterjee, Wilson Qin, Abdul Wasay, Brian Hentschel, Mike Kester, Niv Dayan, Demi Guo, Minseo Kang, Yiyou Sun. IEEE Data Engineering Bull, 2019. — **IEEE DEBull 2019**

Design Continuums and the Path Toward Self-Designing Key-Value Stores that Know and Learn. Stratos Idreos, Niv Dayan, Wilson Qin, Mali Akmanalp, Sophie Hilgard, Andrew Ross, James Lennon, Varun Jain, Harshita Gupta, David Li, and Zichen Zhu. Proceedings of CIDR Conference on Innovative Data Systems Research, 2019. — **CIDR 2019**

Coconut: Sortable Summarizations for Scalable Indexes over Static and Streaming Data Series. Haridimos Kondylakis, Niv Dayan, Kostas Zoumpatianos, Themis Palpanas. The International Journal on Very Large Databases, 2019. — **VLDBJ 2019**

Optimal Bloom Filters and Adaptive Merging for LSM-Trees. Niv Dayan, Manos Athanassoulis, Stratos Idreos. ACM Transactions on Database Systems, 2018. — **TODS 2018**

The Periodic Table of Data Structures. Stratos Idreos, Kostas Zoumpatianos, Manos Athanassoulis, Niv Dayan, Brian Hentscshel, Michael S. Kester, Demi Guo, Lukas Maas, Wilson Qin, Abdul Wasay, Yiyou Sun. IEEE Data Engineering Bull. Sep, 2018 — **IEEE DEBull 2018**

Dostoevsky: Better Space-Time Trade-Offs for LSM-Tree Based Key-Value Stores via Adaptive Removal of Superfluous Merging. Niv Dayan, Stratos Idreos. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2018. — **SIGMOD 2018**

Coconut: A Scalable Bottom-Up Approach for Building Data Series Indexes. Haridimos Kondylakis, Niv Dayan, Kostas Zoumpatianos, Themis Palpanas. In Proceedings of the Very Large Databases Endowment, 2018. — **PVLDB 2018**

Monkey: Optimal Navigable Key-Value Store. Niv Dayan, Manos Athanassoulis, Stratos Idreos. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2017. Best of SIGMOD. — **SIGMOD 2017**

Data Canopy: Accelerating Exploratory Statistical Analysis. Abdul Wasay, Xinding Wei, Niv Dayan, Stratos Idreos. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2017. — **SIGMOD 2017**

GeckoFTL: Scalable Flash Translation Techniques For Very Large Flash Devices. Niv Dayan, Phillippe Bonnet, Stratos Idreos. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2016. — **SIGMOD 2016**

SELECTED REFEREED SHORT PAPERS

Coconut Palm: Static and Streaming Data Series Exploration Now in your Palm. Haridimos Kondylakis, Niv Dayan, Kostas Zoumpatianos, Themis Palpanas. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2019. **SIGMOD 2019**

Past and Future Steps for Adaptive Storage Data Systems: From Shallow to Deep Adaptivity. Stratos Idreos, Manos Athanassoulis, Niv Dayan, Demi Guo, Mike S. Kester, Lukas Maas, Kostas Zoumpatianos. In Proceedings of the International Workshop on Business Intelligence for Real-Time Enterprises, 2016. **BIRTE 2016**

EagleTree: Exploring the Design Space of SSD-Based Algorithms. Niv Dayan, Martin Kjaer Svendsen, Matias Bjoerling, Philippe Bonnet, Luc Bouganim. In Proceedings of the Very Large Databases Endowment, 2013. **PVLDB 2013**

The Necessary Death of the Block Device Interface. Matias Bjoerling, Philippe Bonnet, Luc Bouganim, Niv Dayan. In Proceedings of CIDR Conference on Innovative Data Systems Research, 2013. **CIDR 2013**

INVITED TALKS

2020   Imperial College London

2019   Technion · Hebrew University of Jerusalem · IBM Research Israel · Yahoo Research Israel · University of Haifa · University of Washington · Microsoft Research Redmond · Boston University

2018   NetApp Boston · Facebook Palo Alto · Vertica · University of Chicago · University of Wisconsin

2017   NetApp Boston · Facebook Boston · Vertica · Tufts University · University of Dresden · IACS Computefest Harvard

2016   IACS Computefest Harvard

PATENTS

1.   Managing LSM-Tree Of Key-Value Pairs That Is Stored In a Non-volatile Memory, 2020.

2.   Log-Structured Merge-Bush, 2019.

3.   Key-Value Stores With Optimized Merge Policies And Optimized LSM-Tree Structures, 2019.

4.   Solid-State Storage Device Flash Translation Layer, 2017.

SERVICE

PROGRAM COMMITTEE

2021   ACM SIGMOD International Conference on Management of Data

2020   International Conference on Very Large Databases (VLDB)

EXTERNAL REVIEWING

2021   International Journal on Very Large Databases (VLDBJ)

2018   Transactions on Knowledge and Data Engineering (TKDE)

2016   International Conference on Very Large Databases (VLDB)

TEACHING

Harvard 2017, 2018   TA in undergraduate data systems (CS165)

Harvard 2016, 2017, 2018   TA in graduate data science (AC297r)

IT University of Copenhagen 2014   TA in graduate database tuning

University of Dundee 2014   TA in undergraduate data structures