




# Curriculum Vitae

## Niv Dayan

### Personal Information

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NAME AND TITLE:	Niv Dayan
ADDRESS:	Computer Science Bahen Centre for Information Technology 40 St George St Toronto, ON M5S 2E4
	 <b>Tel:</b> 437-410-7707
	 <b>Email:</b> niv.dayan@utoronto.ca
	 <b>Website:</b> <a href="https://www.nivdayan.net/">https://www.nivdayan.net/</a>

### Academic Qualifications

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2015	PhD	Computer Science	IT University of Copenhagen
2012	MSc	Software Development and Technology	IT University of Copenhagen
2009	BSc	Applied Computing	University of Dundee

### Employment

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2023 – now	Assistant Professor	Computer Science	University of Toronto
2019 – 2022	Research Scientist	Algorithm Engineering	Pliops
2023 – 2024	Technical Advisor	Advisory Board	Speedb
2015 – 2019	Postdoc	Computer Science	Harvard

### Research Interests

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Database systems, data structures, computer storage

## Honours and Awards

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2026	Honorable Mention for Best Paper	SIGMOD
2026	Research Highlight Award	SIGMOD Record
2025	VLDB Best Paper Award	VLDB Endowment
2025	Honorable Mention for Best Artifact	ACM SIGMOD
2024	Distinguished Program Committee Member Award	ACM SIGMOD
2024	Distinguished Program Committee Member Award	EDBT Association
2024	Best Artifact Award	ACM SIGMOD
2017	Best of SIGMOD	ACM SIGMOD
2017	Most Reproducible Paper Award	ACM SIGMOD

## Scholarly Output

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### Refereed

#### Refereed Full Research Conference & Journal Papers

##### 2026

Dynamic Range Filtering Beyond Worst-Case Bounds. Navid Eslami, Ioana O. Bercea, Niv Dayan. ACM SIGMOD Record 2026.

Sublime: Sublinear Error & Space for Unbounded Skewed Streams Navid Eslami, Ioana O. Bercea, Rasmus Pagh, Niv Dayan. ACM SIGMOD International Conference on Management of Data. 2026.

Zeno Filter: To Infinity in Tiny Steps Hyuhng Min Kim, Navid Eslami, Niv Dayan. ACM SIGMOD International Conference on Management of Data. 2026.

Aeris Filter: A Strongly and Monotonically Adaptive Range Filter Yuvaraj Chesetti, Navid Eslami, Huanchen Zhang, Niv Dayan, Prashant Pandey. ACM SIGMOD International Conference on Management of Data. 2026.

##### 2025

Diva: Dynamic Range Filter for Var-Length Keys and Queries Navid Eslami, Ioana O. Bercea, Niv Dayan. Proceedings of the Very Large Databases Endowment (VLDB). 2025.

Sphinx: A Succinct Perfect Hash Index for x86 Sajad Faghfoor Maghrebi, Niv Dayan. Proceedings of the Very Large Databases Endowment (VLDB). 2025.

Memento Filter: A Fast, Dynamic, and Robust Range Filter. Navid Eslami, Niv Dayan. ACM SIGMOD International Conference on Management of Data. 2025.

##### 2024

Aleph Filter: To Infinity in Constant Time. Niv Dayan, Ioana Bercea, Rasmus Pagh. International Conference on Very Large Data Bases. 2024.

On the Security of Quotient Filters: Attacks and Potential Countermeasures. Pedro Reviriego, Miguel González, Niv Dayan, Gabriel Huecas, Shanshan Liu, Fabrizio Lombardi. IEEE Transactions on Computers, 2024.

## 2023

InfiniFilter: Expanding Filters to Infinity and Beyond. Niv Dayan, Ioana Bercea, Pedro Reviriego, Rasmus Pagh. In Proceedings of the ACM SIGMOD International Conference on Management of Data. 2023.

Cardinality Estimation Adaptive Cuckoo Filters (CE-ACF): Approximate Membership Check and Distinct Query Count for High-Speed Network Monitoring. Pedro Reviriego, Jim Apple, Alvaro Alonso, Otmar Ertl, Niv Dayan. IEEE/ACM Transactions on Networking, 2024.

## 2022

Spooky: Granulating LSM-Tree Compactions Correctly. Niv Dayan, Tamar Weiss, Shmuel Dashevsky, Michael Pan, Edward Bortnikov, Moshe Twitto. In Proceedings of the Very Large Databases Endowment (VLDB). 2022.

## 2021

Chucky: A Succinct Cuckoo Filter for LSM-Tree. Niv Dayan, Moshe Twitto. In Proceedings of the ACM SIGMOD International Conference on Management of Data, 2021.

The End of Moore's Law and the Rise of The Data Processor. Niv Dayan, Moshe Twitto, Yuval Rochman, Uri Beitler, Itai Ben Zion, Edward Bortnikov, Shmuel Dashevsky, Shmuel Dashevsky, Evgeni Ginzburg, Igal Maly, Avraham (Poza) Meir, Mark Mokryn, Iddo Naiss, Noam Rabinovich. In Proceedings of the Very Large Databases Endowment (VLDB), 2021. Industry Track.

## 2020

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.

## 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.

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.

## 2018

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

## 2017

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.

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.

## 2016

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.

## Tutorials

### 2024

Beyond Bloom: A Tutorial on Future Feature-Rich Filters. Prashant Pandey, Martín Farach-Colton, Niv Dayan, Huanchen Zhang. Tutorial at *ACM SIGMOD International Conference on Management of Data*, 2024.

### 2023

The LSM Design Space and its Read Optimizations. Subhadeep Sarkar, Niv Dayan, Manos Athanassoulis. In *Proceedings of the IEEE International Conference on Data Engineering*, 2023.

## Short Papers & Demos

### 2024

Wayfinder: Speeding up Key-Value Separation by Avoiding I/O Based Indirection. Guy Khazma, Myles Thiessen, Eyal de Lara, Niv Dayan. SiMOD Workshop on Simplicity in Data Management. 2024.

## 2019

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. Volume 28.

## 2013

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 (VLDB), 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.

## Non Refereed

Total: 3 (2015 - 2019)

## Journals

### 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, Yiyu Sun. IEEE Data Engineering Bulletin (IEEE DEBull), 2019.*

### 2018

*The Periodic Table of Data Structures. Stratos Idreos, Kostas Zoumpatianos, Manos Athanassoulis, Niv Dayan, Brian Hentschel, Michael S. Kester, Demi Guo, Lukas Maas, Wilson Qin, Abdul Wasay, Yiyu Sun. IEEE Data Engineering Bulletin (IEEE DEBull), 2018.*

### 2015

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. International Workshop on Business Intelligence for the Real-Time Enterprise. 2015

## Patents

### 2025

Managing LSM-Tree of Key-Value Pairs stored in Non-volatile Memory. Niv Dayan, Moshe Twitto. 2025. US Patent.

### 2024

Separated Database Management. Guy Guetta, Edward Bortnikov, Michael Pan, Moshe Twitto, Tamar Weiss, Shmuel Dashevsky, Niv Dayan. 2024. US Patent.

### 2023

Updating a Log Structured Merge Tree. Niv Dayan, Edward Bortnikov, Moshe Twitto. 2023. US Patent.

Systems and methods for accelerating exploratory statistical analysis. Stratos Idreos, Wasay Abdul, Niv Dayan. 2023. US Patent.

### 2021

Key-Value Stores with Optimized Merge Policies and Optimized LSM-Tree Structures. Stratos Idreos, Niv Dayan. 2021. US Patent.

### 2019

File management with log-structured merge bush. Niv Dayan, Stratos Idreos. 2019. US Patent.

### 2017

Solid-State Storage Device Flash Translation Layer. Philippe Bonnet, Niv Dayan. 2017. US Patent.

## Presentations

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### 2025

- IBM's DB2 Team
- VastData
- AMD Tech Talk

Memento Filter & Diva  
Scaling Storage Engines  
Scaling Storage Engines



## 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. “”

## Teaching Experience

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### Undergraduate

*University of Toronto:*

Database System Technology, CSC443H1 (2025, Fall);  
Database System Technology, CSC443H1 (2024, Fall);  
Database System Technology, CSC443H1 (2023, Fall);  
Database System Technology, CSC443H1 (2023, Winter);

### Graduate

*University of Toronto:*

Research Topics in Database Management, CSC2525H (2026, winter);

Research Topics in Database Management, CSC2525H (2025, winter);  
Research Topics in Database Management, CSC2525H (2024, winter)

## Supervisory Experience

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### Graduate Student Supervision

#### Primary/Co-Advisor: PhD Students

2024 – current	Primary	Hyuhng Min Kim
2023 – current	Primary	Navid Eslami
2023 – current	Primary	Sajad Maghrebi
2023 – current	Co-Advisor	Guy Khazma

#### Primary/Co-Advisor: Master's Students

2025 – current	Co-Advisor	Victor Pineda
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## Professional Service

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2026	Lightning Talks Track Chair	ICDE Conference
2026	Program committee	CIDR Conference
2026	Program committee	SIGMOD Conference
2026	Associate Editor	VLDB Conference
2026	Program committee	SYSTOR Conference
2025	Associate Editor	VLDB Conference
2025	Program committee	CIDR Conference
2025	Program committee	SIGMOD Conference
2025	Program committee	EDBT Conference
2025	Area Chair	ICDE Conference
2024	Program committee	SYSTOR Conference
2024	Program committee	CIDR Conference
2024	Program committee	SIGMOD Conference
2024	Program committee	Workshop on Analytics in VLDB
2023	Reproducibility Reviewer	SIGMOD
2023	Program committee	ICDE Conference Industry Track
2022	Program committee	SIGMOD Conference
2021	Program committee	SIGMOD Conference
2020	Program committee	VLDB Conference

## University Service

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2023 – current	Distinguished Lecture Series Coordinator	Computer Science
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2023 – current  
2024  
2025  
2023 – 2024

POC Hiring & Liaison for Sysnet Group  
Refurbishment Coordinator for Sysnet Space  
Coordinator of Applied AI Colloquium  
Grad Metaskills Committee Member

Computer Science  
Computer Science  
Computer Science  
Computer Science