

# Manoussos-Gavriil (Manos) Athanassoulis

Adjunct Assistant Professor, Boston University

Research Associate, DASlab, Harvard University

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## RESEARCH INTERESTS

I am interested in **designing data systems**. My goal is to build systems that utilize efficiently the underlying **storage and processing hardware**, and match a wide range of application requirements like analytical processing, transactional processing, and, scientific data exploration. I am particularly interested in the **data and metadata organization** in the **levels of the memory and storage hierarchy**, in the data structures that are (and can be) employed to **index, access, and update data**, and in the **query processing** paradigms that are needed for new system designs and workloads.

## PROFESSIONAL EXPERIENCE

|                   |   |                       |
|-------------------|---|-----------------------|
| 06/2018 – now     | <b>Adjunct Assistant Professor at Boston University</b>           | Boston, MA, USA       |
| 09/2017 – now     | <b>Research Associate at Harvard University</b>                   | Cambridge, MA, USA    |
| 01/2017 – 05/2017 | <b>Visiting Lecturer at Tufts University</b>                      | Medford, MA, USA      |
| 09/2014 – 08/2017 | <b>Postdoctoral Fellow at Harvard University</b>                  | Cambridge, MA, USA    |
| 10/2008 – 06/2014 | <b>PhD Researcher at École Polytechnique Fédérale de Lausanne</b> | Lausanne, Switzerland |
| 07/2011 – 10/2011 | <b>Research Intern at IBM Watson Research Labs</b>                | Hawthorne, NY, USA    |
| 10/2004 – 08/2008 | <b>Researcher at University of Athens</b>                         | Athens, Greece        |

## HONORS & AWARDS

|           |   |
|-----------|---|
| 2018      | “Best of VLDB 2017” selection with invitation to publish at VLDBJ                             |
| 2018      | “Distinguished PC Member” at SIGMOD   |
| 2017      | “Best of SIGMOD 2017” selection with invitation to publish at TODS Journal                    |
| 2017      | “Most Reproducible Paper Award” at SIGMOD   |
| 2015-2016 | Harvard University Certificate of Distinction in Teaching (Fall 2015, Spring 2016, Fall 2016) |
| 2015-2016 | SNSF Early Postdoc Mobility Fellowship  |
| 2014      | Harvard University Certificate of Teaching Excellence (Fall 2014)                             |
| 2013      | EPFL Outstanding Teaching Assistantship Award   |
| 2011-2012 | IBM Ph.D. Fellowship  |
| 2010      | “Best of VLDB 2010” selection with invitation to publish at VLDB Journal                      |
| 2007      | Prize for having the best student record, M.Sc., University of Athens                         |
| 2006-2007 | Graduate Fellowship from Onassis Foundation   |
| 2006      | “Ericsson Award of Excellence in Telecommunications” for B.Sc. Thesis                         |
| 2005      | Valedictorian B.Sc., University of Athens   |
| 2001-2005 | Fellowship from State Fellowship Foundation of Greece   |

## EDUCATION

|   |   |
|---|---|
| <b>Ph.D. in Computer Science</b> , February 2014  | <b>Ecole Polytechnique Fédérale de Lausanne</b> |
| Thesis: “Solid-State Storage and Work Sharing for Efficient Scaleup Data Analytics”                 |   |
| Advisor: Prof. Anastasia Ailamaki ( <a href="mailto:natassa@epfl.ch">natassa@epfl.ch</a> )          |   |
| <b>M.Sc. in Computer Systems Technology</b> , March 2008  | <b>University of Athens, Greece</b>             |
| Thesis: “Thread scheduling technique for avoiding page thrashing”                                   |   |
| Supervisor: Prof. Stathes Hadjiefthymiades ( <a href="mailto:shadj@di.uoa.gr">shadj@di.uoa.gr</a> ) |   |
| <b>B.Sc. in Informatics &amp; Telecommunications</b> , September 2005                               | <b>University of Athens, Greece</b>             |
| Thesis: “A Multi-Criteria Message Forwarding Architecture for Wireless Sensor Networks”             |   |
| Supervisor: Prof. Stathes Hadjiefthymiades ( <a href="mailto:shadj@di.uoa.gr">shadj@di.uoa.gr</a> ) |   |

**PERSONAL RESEARCH GRANTS**

2015-2016 Swiss National Science Foundation (SNSF), Early Postdoc Mobility Fellowship, Grant No. P2ELP2\_158936, “The RUM Conjecture and the Big Data Access Wizard”

**PUBLICATIONS****Journal and Journal-equivalent Conference Papers**

1. N. Dayan, **M. Athanassoulis**, S. Idreos, “Optimal Bloom Filters and Adaptive Merging for LSM-Trees”, ACM Transactions on Database Systems (**TODS**), (to appear).
2. S. Idreos, K. Zoumpatianos, **M. Athanassoulis**, N. Dayan, B. Hentschel, M. Kester, D. Guo, L. Maas, W. Qin, A. Wasay, Y. Sun, “The Periodic Table of Data Structures”, **IEEE Data Engineering Bulletin**, Vol. 41(3), **2018**.
3. M. Olma, M. Karpathiotakis, I. Alagiannis, **M. Athanassoulis**, A. Ailamaki, “Slalom: Coasting Through Raw Data via Adaptive Partitioning and Indexing”, In Proc. of Very Large Databases Endowment (**PVLDB**), Vol. 10(10), **2017**. *Invited for publication at the Special Issue of VLDB Journal for VLDB 2017 Best Papers (one of top 5 papers)*.
4. M. Kester, **M. Athanassoulis**, S. Idreos, “Access Path Selection in Main-Memory Optimized Data Systems: Should I Scan or Should I Probe?”, In Proc. of the ACM **SIGMOD** Int’l Conference on Management of Data, **2017**.
5. N. Dayan, **M. Athanassoulis**, S. Idreos, “Monkey: Optimal Navigable Key-Value Store”, In Proc. of the ACM **SIGMOD** International Conference on Management of Data, Chicago, **2017**. *Invited for publication at the Special Issue of TODS Journal for SIGMOD 2017 Best Papers (one of top 4 papers)*.
6. **M. Athanassoulis**, Z. Yan, S. Idreos, “UpBit: Scalable In-Memory Updatable Bitmap Indexing”, In Proc. of the ACM **SIGMOD** International Conference on Management of Data, **2016**. *Awarded the ACM Computationally Replicable label & Won the Most Reproducible Paper award*.
7. **M. Athanassoulis**, S. Idreos, “Design Tradeoffs of Data Access Methods”, (Tutorial) In Proc. of the ACM **SIGMOD** International Conference on Management of Data, San Francisco, **2016**.
8. **M. Athanassoulis**, S. Chen, P. Gibbons, A. Ailamaki, R. Stoica, “Online Updates on Data Warehouses via Judicious Use of Solid-State Storage”, ACM Transactions on Database Systems (**TODS**), Vol. 40(1), **2015**.
9. **M. Athanassoulis**, A. Ailamaki, “BF-Tree: Approximate Tree Indexing”, In Proc. of Very Large Databases Endowment (**PVLDB**), Vol. 7(14), **2014**.
10. I. Psaroudakis, **M. Athanassoulis**, A. Ailamaki, “Sharing Data and Work Across Concurrent Analytical Queries”, In Proc. of Very Large Databases Endowment (**PVLDB**), Vol. 6(9), **2013**.
11. R. Johnson, I. Pandis, R. Stoica, **M. Athanassoulis**, and A. Ailamaki. “Scalability of write-ahead logging on multicore and multisoocket hardware”, The VLDB Journal (**VLDBJ**), Vol. 21(2), **2012**.
12. **M. Athanassoulis**, S. Chen, A. Ailamaki, P. Gibbons, and R. Stoica, “MaSM: Efficient Online Updates in Data Warehouses”, In Proc. of the ACM **SIGMOD** Int’l Conf. on Management of Data, **2011**.
13. **M. Athanassoulis**, A. Ailamaki, S. Chen, P. Gibbons, and R. Stoica, “Flash in a DBMS: Where and How?”, **IEEE Data Engineering Bulletin**, Vol. 33(4), **2010**.
14. S. Chen, A. Ailamaki, **M. Athanassoulis**, P. Gibbons, R. Johnson, I. Pandis and R. Stoica, “TPC-E vs. TPC-C: Characterizing the New TPC-E Benchmark via an I/O Comparison Study”, ACM **SIGMOD Record**, Vol. 39(4), **2010**.
15. R. Johnson, I. Pandis, R. Stoica, **M. Athanassoulis**, and A. Ailamaki, “Aether: A Scalable Approach to Logging”, In Proc. of Very Large Databases Endowment (**PVLDB**), Vol. 3(1-2), **2010**. *Invited for publication at the Special Issue of VLDB Journal for VLDB 2010 Best Papers (one of top 5 papers)*.

**Conference Vision Papers**

16. **M. Athanassoulis**, M. S. Kester, L. M. Maas, R. Stoica, S. Idreos, A. Ailamaki, M. Callaghan, “Designing Access Methods: The RUM Conjecture”, In Proc. of the International Conference on Extending Database Technology (**EDBT**), **2016**.
17. A. Wasay, **M. Athanassoulis**, S. Idreos, “Queriosity: Automated Data Exploration”, In Proc. of the International Congress on **Big Data**, **2015**.

**Workshop and other Conference Papers**

18. S. Idreos, **M. Athanassoulis**, N. Dayan, D. Guo, M. S. Kester, L. Maas, K. Zoumpatianos, “Past and Future Steps

- for Adaptive Storage Data Systems: From Shallow to Deep Adaptivity”, (Keynote) In Proc. of the International Workshop on Enabling Real-Time Business Intelligence (**BIRTE**), **2016**.
19. S. Xi, O. Babarinsa, **M. Athanassoulis**, S. Idreos, “Beyond the Wall: Near-Data Processing for Databases”, In Proc. of the Int’l Workshop on Data Management on New Hardware (**DaMoN**), **2015**.
  20. I. Alagiannis, **M. Athanassoulis**, and A. Ailamaki, “Scaling Up Analytical Queries with Column-Stores”, In Proc. of the International Workshop on Testing Database Systems, (**DBTest**), **2013**.
  21. **M. Athanassoulis**, B. Bhattacharjee, M. Canim, K. Ross, “Querying Persistent Graphs using Solid State Storage”, 4<sup>th</sup> Annual Non-Volatile Memories Workshop (**NVMW**), **2013**.
  22. **M. Athanassoulis**, B. Bhattacharjee, M. Canim, K. Ross, “Path Processing Using Solid State Storage”, In Proc. of the 3<sup>rd</sup> International Workshop on Accelerating Data Management Systems Using Modern Processor and Storage Architectures (**ADMS**), **2012**.
  23. R. Johnson, **M. Athanassoulis**, R. Stoica and A. Ailamaki, “A New Look at the Roles of Spinning and Blocking”, In Proc. of the Int’l Workshop on Data Management on New Hardware (**DaMoN**), **2009**.
  24. R. Stoica, **M. Athanassoulis**, R. Johnson and A. Ailamaki, “Evaluating and Repairing Write Performance on Flash Devices”. In Proc. of the International Workshop on Data Management on New Hardware (**DaMoN**), **2009**.
  25. **M. Athanassoulis**, I. Alagiannis and S. Hadjiefthymiades, “Energy Efficiency in Wireless Sensor Networks: A Utility-Based Architecture”, In Proc. of the 13<sup>th</sup> European Wireless (**EW**), **2007**.
  26. **M. Athanassoulis**, I. Alagiannis and S. Hadjiefthymiades, “A Multi-Criteria Message Forwarding Architecture for Wireless Sensor Networks”, In Proc. of the 10<sup>th</sup> Pan-Hellenic Conference on Informatics (**PCI**), **2005**.

#### Demo Papers

27. I. Psaroudakis, **M. Athanassoulis**, M. Olma, A. Ailamaki, “Reactive and Proactive Sharing Across Concurrent Analytical Queries”, In Proc. of the ACM **SIGMOD** International Conference on Management of Data, **2014**.

#### PATENTS

- “Analytic Database with Optimal Navigable Key-value Store.” Filed on 1/2017 (US Patent Office).

#### TEACHING EXPERIENCE

##### Lecturer at Tufts University (2017)

- Database Systems (Spring 2017)

##### Head Teaching Fellow at Harvard University (2014-2016)

- Data Systems (Fall 2015, Fall 2016) and Big Data Systems (Fall 2014, Spring 2016)

##### Head TA at Ecole Polytechnique Fédérale de Lausanne (2010-2013)

- Databases/Introduction to Database Systems (Spring 2010, Spring 2011, Spring 2012, Spring 2013).

##### Teaching Assistant at University of Athens (2005-2007)

- Foundations of Databases (Spring 2006, Spring 2007), Computer Architecture I (Fall 2006), Operating Systems (Fall 2005, Fall 2006)

#### SERVICE

|                                   |  |
|-----------------------------------|--|
| Program Committee Member/Reviewer | ACM SIGMOD 2018-2019, ACM SIGMOD Student Research Competition 2019, IEEE ICDE 2019 (demo track), EDBT 2019 (demo track), BigVis 2018-2019, XtremeCloud 2018, IEEE ICDE 2018, SSDBM 2018, HardBD 2018, AIMD 2018, VLDB 2017 (demo track), HDMS 2016-2018, IEEE ICDE PhD Workshop 2017, DB Reproducibility 2015-2018   |
| Journal Reviewer                  | IEEE Transactions on Knowledge and Data Engineering (TKDE), 2018; IEEE Transactions on Computers (TC), 2018; IEEE Transactions on Cloud Computing (TCC), 2017; Distributed and Parallel Databases (DAPD), 2017; Computers and Security (COSE), 2017; Journal of Internet Services and Applications (JISA), 2016; The Computer Journal, 2013; Information Systems (IS), 2013; ACM Transactions on Storage (TOS), 2012 |
| External Reviewer                 | The VLDB Journal (VLDBJ), 2015; ACM Transactions on Database Systems (TODS), 2014; SIGMOD 2015, VLDB 2015, CIDR 2015, EDBT 2015, FAST 2015, HardBD 2015, CloudDP 2015, SIGMOD 2014, ICDE 2014, EDBT 2014, VLDB 2013, ASPLOS 2012, VLDB 2011, DAMON 2010, DAMON 2009  |

**SELECTED RECENT TALKS AND LECTURES****2018**

University of Athens, University of Pittsburgh, Tufts University, Boston University,  
Northwestern University, Institute of Science & Technology – Austria,  
University of Warwick, Paris Descartes University, École Polytechnique, École Normale Supérieure

**2017**

North East DB Day, Guest Lecture in CS265 Harvard University

**2016**

Skoltech, Vision Track at EDBT 2016, Tutorial at ACM SIGMOD 2016,  
Guest Lecture in CS265 Harvard University

Last update: December 2018.