

# Manoussos-Gavriil (Manos) Athanassoulis

Assistant Professor, Boston 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 data analysis, transactional processing, scientific data exploration, and data science pipelines. 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

01/2019 – now	<b>Assistant Professor at Boston University</b>	Boston, MA, USA
06/2018 – 12/2018	<b>Adjunct Assistant Professor at Boston University</b>	Boston, MA, USA
09/2017 – 12/2018	<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 Ecole 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 VLDB Journal
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. M. Olma, M. Karpathiotakis, I. Alagiannis, **M. Athanassoulis**, A. Ailamaki, “Adaptive Partitioning and Indexing for in-situ Query Processing”, The VLDB Journal (**VLDBJ**), *to appear*.
2. N. Dayan, **M. Athanassoulis**, S. Idreos, “Optimal Bloom Filters and Adaptive Merging for LSM-Trees”, ACM Transactions on Database Systems (**TODS**), Vol. 43(4), **2018**.
3. 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**.
4. 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)*.
5. 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**.
6. 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)*.
7. **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*.
8. **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**.
9. **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**.
10. **M. Athanassoulis**, A. Ailamaki, “BF-Tree: Approximate Tree Indexing”, In Proc. of Very Large Databases Endowment (**PVLDB**), Vol. 7(14), **2014**.
11. 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**.
12. R. Johnson, I. Pandis, R. Stoica, **M. Athanassoulis**, and A. Ailamaki. “Scalability of write-ahead logging on multicore and multsocket hardware”, The VLDB Journal (**VLDBJ**), Vol. 21(2), **2012**.
13. **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**.
14. **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**.
15. 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**.
16. 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**

17. **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**.
18. 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**

19. 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**.
20. 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**.
21. 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**.
22. **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**.
23. **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**.
24. 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**.
25. 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**.
26. **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**.
27. **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**

28. 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**

**Boston University**, Department of Computer Science

Spring 2019 CAS CS 591: Data Systems Architectures

**Tufts University**, Department of Computer Science

Spring 2017 Comp115: Database Systems (Lecturer)

**Harvard University**, School of Engineering and Applied Sciences

Fall 2016 CS165: Data Systems (Head Teaching Fellow)

Spring 2016 CS265: Big Data Systems (Head Teaching Fellow)

Fall 2015 CS165: Data Systems (Head Teaching Fellow)

Fall 2014 CS265: Big Data Systems (Head Teaching Fellow)

**Ecole Polytechnique Fédérale de Lausanne**, School of Computer and Communication Sciences

Spring 2013 Introduction to Database Systems (Head Teaching Assistant)

Spring 2012 Introduction to Database Systems (Head Teaching Assistant)

Spring 2011 Databases (Head Teaching Assistant)

Spring 2010 Databases (Head Teaching Assistant)

**University of Athens**, Department of Informatics and Telecommunications

Spring 2007 Foundations of Databases (Head Teaching Assistant)

Fall 2006 Computer Architecture I (Teaching Assistant)

Operating Systems (Teaching Assistant)

Spring 2006 Foundations of Databases (Head Teaching Assistant)

Fall 2005 Operating Systems (Teaching Assistant)

**SERVICE****Committee Member**

- 2020 ACM SIGMOD, VLDB, HDMS
- 2019 ACM SIGMOD, VLDB (demo track), ACM SIGMOD Student Research Competition, IEEE ICDE (demo track), EDBT (demo track), BigVis, HardBD & Active, HDMS
- 2018 ACM SIGMOD, IEEE ICDE, SSDBM, BigVis, XtremeCloud, HardBD & Active, AIMD, ACM SIGMOD Reproducibility, HDMS
- 2017 VLDB (demo track), IEEE ICDE PhD Workshop, ACM SIGMOD Reproducibility, HDMS
- 2016 ACM SIGMOD Reproducibility, HDMS
- 2015 ACM SIGMOD Reproducibility

**Journal Reviewer**

- 2019 ACM Transactions on Database Systems (TODS), Distributed and Parallel Databases (DAPD)
- 2018 IEEE Transactions on Knowledge and Data Engineering (TKDE), IEEE Transactions on Computers (TC)
- 2017 IEEE Transactions on Cloud Computing (TCC), Distributed and Parallel Databases (DAPD), Computers and Security (COSE)
- 2016 Journal of Internet Services and Applications (JISA)
- 2013 The Computer Journal, Information Systems (IS)
- 2012 ACM Transactions on Storage (TOS)

**Technical Paper Reviewer**

ACM Transactions on Database Systems (TODS), The VLDB Journal (VLDBJ), ACM SIGMOD, VLDB, IEEE ICDE, CIDR, ASPLOS, EDBT, FAST, HardBD, CloudDP, DAMON

**SELECTED RECENT TALKS AND LECTURES****2019**

Panel on Invisible Foundations at Boston University Data Science Day 2019

**2018**

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

**2017**

North East DB Day at MIT  
Guest Lecture in CS265 Harvard University

**2016**

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

Last update: May 2019.