Stratos Papadomanolakis

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RESEARCH INTERESTS

My broad research interests span all aspects of large-scale data management performance, such as query execution and optimization, indexing, storage system design and support for emerging applications. I focus on two key research areas with a critical impact on large-scale data management. The first is *self-tuning* databases and in particular algorithms for automated database design. Automated design is crucial for performance and a challenging task given today's complex systems and workloads. The second is efficient indexing, query execution and disk layouts for datasets such as computational meshes, graphs and arrays, that are common in scientific and enterprise computing, but not effectively handled by existing databases.

EDUCATION

2001-present	Carnegie Mellon University. Ph.D Candidate in the Department of Electrical and Computer Engineering. Thesis: *Database Support for Scientific Applications.* Advisor: Prof. Anastassia Ailamaki.
May 2003	Carnegie Mellon University. Master of Science in the Department of Electrical and Computer Engineering. Thesis: *Automated Schema Partitioning for Large Databases.* Advisor: Prof. Anastassia Ailamaki.
1996-2001	Technical University of Crete, Greece. Diploma in Electronics and Computer Engineering. Thesis: *Design and Implementation of a TV-Anytime Video Metadata Model.* Advisor: Prof. Stavros Christodoulakis.

PUBLICATIONS

2007	Stratos Papadomanolakis, Anastassia Ailamaki, "An Integer Linear Programming Approach to Database Physical Design". *ICDE Workshop on Self-Managing Database Systems (SMDB 2007).*

2007 Xiaodian Wang, Tanu Malik, Randal Burns, Stratos Papadomanolakis, Anastassia Ailamaki, "A Workload-Driven Unit of Cache Replacement for Mid-Tier Database Caching". *12th International Conference on Database Systems for Advanced Applications (DASFAA 2007).*

2007 Minglong Shao, Steven Schlosser, Stratos Papadomanolakis, Jiri Schindler, Anastassia Ailamaki, Gregory Ganger. "MultiMap: Preserving disk locality for multidimensional datasets". *IEEE 23rd International Conference on Data Engineering (ICDE 2007).*

2006 Stratos Papadomanolakis, Debabrata Dash, Anastassia Ailamaki, "Intelligent Use of the Query Optimizer for Automated Physical Design". *CMU Technical Report, CMU-CS-06-151 (also under submission).*

2006 Stratos Papadomanolakis, Anastassia Ailamaki, Tiankai Tu, David R. O.Hallaron, Gerd Heber. "Efficient Query Processing on Unstructured Tetrahedral Meshes". *2006 ACM SIGMOD International Conference on Management of Data.*

2005 Steven W. Schlosser, Jiri Schindler, Stratos Papadomanolakis, Minglong Shao, Anastassia Ailamaki, Christos Faloutsos, Gregory R. Ganger. "On Multidimensional Data and Modern Disks". *4th USENIX Conference on File and Storage Technologies (FAST '05).* **Best paper award**.

2004 Stratos Papadomanolakis, Anastassia Ailamaki. "AutoPart: Automating Schema Design for Large Scientific Databases Using Data Partitioning". *16th International Conference on Scientific and Statistical Database Management (SSDBM 2004).*

2004 Stratos Papadomanolakis, Anastassia Ailamaki. "Workload-Driven Schema Design for Large Scientific Databases". *IEEE Data Engineering Bulletin 2004.*

2001 Chrisa Tsinaraki, Stratos Papadomanolakis, Stavros Christodoulakis."Towards a Two-Layered Video Metadata Model". *2001 International Conference on Database and Expert Systems (DEXA 2001).*

FUNDING PROPOSALS

NSF Grant for research on "Computational Databases".
PIs: A.Ailamaki, G.Ganger, D.R.O'Hallaron.

NSF Grant for research on database support for water quality experiments.
PIs: A.Ailamaki, C.Faloutsos, J.Vanbriesen.

NSF grant for research on storage management for astronomy databases.
PIs A.Ailamaki, R.Burns.

NASA grant for research on database support for large-scale astronomy simulations.
PIs A.Ailamaki, J.Gardner.

WORK EXPERIENCE

May-July 2004	Microsoft Research, Redmond WA. 3-month research internship in the Data Management and Exploration Group working with Vivek Narasayya, where I designed and implemented advanced features in Microsoft's Database Tuning Advisor for SQL Server 2005.
1998-2001	Laboratory of Distributed Multimedia Information Systems and Applications, Technical University of Crete. Worked for 3 years on various EU funded projects focused on using databases to facilitate multimedia applications.

TEACHING EXPERIENCE

Fall 2006	Department of Electrical and Computer Engineering, Carnegie Mellon University. Teaching Assistant for graduate-level storage systems course.
Spring 2006	Department of Electrical and Computer Engineering, Carnegie Mellon University. Guest lectures in undergraduate database course.
Spring 2004	Department of Electrical and Computer Engineering, Carnegie Mellon University. Teaching Assistant for undergraduate signal processing course.

PRESENTATIONS

October 2006	Microsoft eScience Workshop, Johns Hopkins University. *"Efficient Query Processing on Unstructured Tetrahedral Meshes".*
2001 - 2006	Parallel Data Lab Retreat, Pittsburgh. *Participation in the annual retreat organized by the Parallel Data Lab, where I presented my work to industry and research lab representatives.*
June 2006	2006 ACM SIGMOD International Conference on Management of Data. *"Efficient Query Processing on Unstructured Tetrahedral Meshes".*
April 2005	Johns Hopkins University. *"AutoPart: Automated Schema Design for Large Scientific Databases using Data Partitioning" (invited talk).* Host: Prof. Randal Burns.
October 2004	University of Pittsburgh. *"The Database Tuning Advisor for Microsoft SQL Server 2005".* Host: Prof. Panos Chrysanthis.

June 2004	16th International Conference on Scientific and Statistical Database Management (SSDBM 2004) Conference. *"AutoPart: Automated Schema Design for Large Scientific Databases using Data Partitioning."*

HONORS

2005	Best paper award, 4th USENIX Conference on File and Storage Technologies (FAST'05).
2004	Finalist for the highly competitive Microsoft Fellowship.
2001	Technical Chamber of Greece fellowship for excellence in graduate studies.
1996-2001	Scholarship by the National Fellowship Foundation, awarded for being first in class for every year of my graduate studies.

REFERENCES

Prof. Anastassia Ailamaki
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