

Marios Hadjieleftheriou

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RESEARCH INTERESTS

Database Indexing, Data Mining, Data Stream Management,
Time-Series Databases, Data Privacy and Security.

EDUCATION

Boston University, USA (March 2005 – September 2005).
Postdoc in Computer Science
Topic: Data stream summarization / Data Privacy and Security.

University of California, Riverside, USA (2000 – 2004).
Ph.D. in Computer Science, Topic: Spatio-temporal Databases.

National Technical University of Athens, Greece (1992 – 1997).
B.Sc. in Electrical and Computer Engineering.

JOURNAL ARTICLES AND BOOK CHAPTERS

1. **Indexing Spatio-temporal Archives**,
M. Hadjieleftheriou, G. Kollios, D. Gunopulos, V. J. Tsotras,
The VLDB Journal (VLDBJ), To appear.
2. **Indexing Multi-Dimensional Time-Series**,
M. Vlachos, M. Hadjieleftheriou, E. Keogh, D. Gunopulos,
The VLDB Journal (VLDBJ), To appear.
3. **SaIL: A Spatial Index Library for Efficient Application Integration**,
M. Hadjieleftheriou, E. Hoel, V. J. Tsotras,
GeoInformatica, To appear.
4. **Indexing Animated Objects Using Spatiotemporal Access Methods**,
G. Kollios, D. Gunopulos, V. J. Tsotras, A. Delis, M. Hadjieleftheriou,
IEEE Transactions on Knowledge and Data Engineering (TKDE),
Vol. 13, No. 5, September/October 2001.
5. **Indexing Multi-Dimensional Trajectories for Similarity Queries**,
M. Vlachos, M. Hadjieleftheriou, E. Keogh, D. Gunopulos,
Chapter 5 in Spatial Databases: Technologies, Techniques and Trends,
Y. Manolopoulos, A. Papadopoulos, M. Vassilakopoulos
Idea Group Publishing (ISBN 1-59140-387-1).

CONFERENCE PUBLICA- TIONS

1. **Time Relaxed Spatiotemporal Trajectory Join**,
P. Bakalov, M. Hadjieleftheriou, V. J. Tsotras,
Proc. of the ACM International Symposium on Advances in Geographic Information Systems (ACM-GIS),
Bremen, Germany, November 2005.
2. **Complex Spatio-temporal Pattern Queries**,
M. Hadjieleftheriou, G. Kollios, P. Bakalov, V. J. Tsotras,
Proc. of the Very Large Data Bases Conference (VLDB),
Trondheim, Norway, September 2005.

3. **Conceptual Partitioning: An Efficient Method for Continuous Nearest Neighbor Monitoring**,
K. Mouratidis, M. Hadjieleftheriou, D. Papadias,
Proc. of the ACM Management of Data (SIGMOD),
Baltimore, MD, June 2005.
4. **Query Sensitive Embeddings**,
V. Athitsos, M. Hadjieleftheriou, G. Kollios, S. Sclaroff,
Proc. of the ACM Management of Data (SIGMOD),
Baltimore, MD, June 2005.
5. **RPJ: Producing Fast Join Results on Streams through Rate-based Optimization**,
Y. Tao, M. L. Yiu, D. Papadias, M. Hadjieleftheriou, N. Mamoulis,
Proc. of the ACM Management of Data (SIGMOD),
Baltimore, MD, June 2005.
6. **Robust Sketching and Aggregation of Distributed Data Streams**,
M. Hadjieleftheriou, John Byers, George Kollios,
Boston University Technical Report 2005-011.
7. **On Trip Planning Queries in Spatial Databases**,
F. Li, D. Cheng, M. Hadjieleftheriou, G. Kollios, S.-H. Teng,
Proc. of the 9th International Symposium on Spatial and Temporal Databases (SSTD),
Angra dos Reis, Brazil, August 2005.
8. **Efficient Trajectory Joins Using Symbolic Representations**,
P. Bakalov, M. Hadjieleftheriou, E. Keogh, V. J. Tsotras,
Proc. of the 6th International Conference on Mobile Data Management (MDM),
Ayia Napa, Cyprus, May 2005.
9. **Mining, Indexing, and Querying Historical Spatiotemporal Data**,
N. Mamoulis, H. Cao, G. Kollios, M. Hadjieleftheriou, Y. Tao, D. W. Cheung,
Proc. of the 10th International Conference on Knowledge Discovery and Data Mining (SIGKDD),
Seattle, WA, August 2004 (Runner-up best application paper).
10. **SaIL: A Library for Efficient Application Integration of Spatial Indices**,
M. Hadjieleftheriou, E. Hoel, V. J. Tsotras,
Proc. of the 16th International Conference on Scientific and Statistical Database Management (SSDBM),
Santorini, Greece, June 2004.
11. **Spatio-Temporal Data Services in a Shared-Nothing Environment**,
M. Hadjieleftheriou, V. Kriakov, Y. Tao, G. Kollios, A. Delis, V. Tsotras,
Proc. of the 16th International Conference on Scientific and Statistical Database Management (SSDBM),
Santorini, Greece, June 2004.
12. **Indexing Multi-Dimensional Time-Series with Support for Multiple Distance Measures**,
M. Vlachos, M. Hadjieleftheriou, D. Gunopulos, E. Keogh,
Proc. of the 9th International Conference on Knowledge Discovery and Data Mining (SIGKDD),
Washington, DC, August 2003.
13. **On-Line Discovery of Dense Areas in Spatio-temporal Databases**,
M. Hadjieleftheriou, G. Kollios, D. Gunopulos, V. J. Tsotras,
Proc. of the 8th International Symposium on Spatial and Temporal Databases (SSTD),
Santorini, Greece, July 2003.

14. **Performance Evaluation of Spatio-temporal Selectivity Estimation Techniques**,
M. Hadjieleftheriou, G. Kollios, V. J. Tsotras,
Proc. of the 15th International Conference on Scientific and Statistical Database Management (SSDBM),
Cambridge, Massachusetts, July 2003.
15. **Efficient Indexing of Spatiotemporal Objects**,
M. Hadjieleftheriou, G. Kollios, V. J. Tsotras, D. Gunopulos,
Proc. of the 8th International Conference on Extending Database Technology (EDBT),
Prague, Czech Republic, March 2002.

WORK
CURRENTLY
UNDER
REVIEW

1. **Processing Ranked Queries with Minimum Space**,
Y. Tao, M. Hadjieleftheriou
2. **Random Sampling for Continuous Streams with Arbitrary Updates**,
Y. Tao, X. Lian, M. Hadjieleftheriou, D. Papadias
3. **Continuous Constraint Query Evaluation for Spatio-temporal Streams**,
M. Hadjieleftheriou, N. Mamoulis, Y. Tao

PROJECTS

Sketches Library. I designed and implemented in C++ (gcc 3.3) a library of sketching techniques (Lossy Counting, Count-Min, FM, AMS, FastAMS, Counting Sketch, Quantile Digest, Bloom Filters, etc.). The main purpose of the library is to provide a common test bed for properly evaluating the pros and cons of various summarization techniques under diverse settings. For that reason, I also implemented state of the art random number generators (e.g., Mersenne), advanced universal classes of hash function, and other essential tools. At this stage, I plan to keep expanding the library until it encompasses a wide range of known sketching techniques. The library is distributed freely under the GNU Lesser General Public License (see <http://cs-people.bu.edu/marioh/sketches>).

Spatial Index Library. I designed and implemented a Spatial Index Library under the GNU Lesser General Public License, both for experimental and practical purposes. The library is widely used by numerous academic institutions and in various commercial applications (e.g., in ESRI ArcGIS), resulting in a very large user base that keeps expanding continuously. Both Java 2 (j2sdk 1.4.1) and C++ (gcc 3.3 or later) implementations are supported. Currently, the library supports R-trees and their variants, MVR-tree, and TPR-tree (see <http://cs-people.bu.edu/marioh/spatialindex>).

Spatio-temporal Generators. I designed and implemented a series of Spatio-temporal object generators for experimental and visualization purposes. The generators have been used extensively by numerous researchers from various institutions in several publications and by undergraduate students in advanced database courses (see <http://cs-people.bu.edu/marioh/generators>).

WORK
EXPERIENCE

Inventive Researcher, AT&T Labs (Since September 2005).
Working for the database research group.

Research Associate, Boston University (March 2005 – September 2005).
Worked on data stream sketching techniques and spatio-temporal data privacy.

Visiting Researcher, City University of Hong-Kong (September 2004 – October 2004).
Worked on problems for join synopsis using random samples, and ranked queries for linear preference functions.

Visiting Researcher, Hong-Kong University (May 2004 – June 2004).
Worked on problems for continuous constraint satisfaction on spatio-temporal streams.

Visiting Researcher, Boston University (October 2003 – January 2004).
Worked on problems for complex spatio-temporal pattern queries.

Summer Internship, ESRI (www.esri.com) (June – September 2002).

Designed and implemented a Spatial Index Library using Visual C++ 6, as a collection of COM objects.

Research Assistant, University of California, Riverside(2001 – 2004).

Worked on numerous projects on spatio-temporal databases (under various NSF grants).

Software Developer, Lambrakis Press S.A. (www.dol.gr) (May – August 1999).

Implemented a stock market client/server application for real time, online trading for the Greek stock market. Client running as a Java applet. Multi-threaded server running on Solaris, implemented in C (see stock market section of <http://www.in.gr>).

Web Developer, I.N. Leosis Publishing Company (<http://www.infopublica.gr>) (1998 – 1999).

Implemented web based electronic commerce applications and web enabled catalogs. Used SQL Server, IIS 4, ASP, VBScript (see <http://www.publicity-guide.gr>).

Lead Architect and Developer, Edafomichaniki Ltd. (1997 – 1998).

Designed and implemented a suite of applications for automating the generation of experimental results concerning several geological measurements. Used Visual C++ 6.

System Administrator, National Technical University of Athens(1992 – 1998).

System administrator for the Software Engineering laboratory (Windows 95, Windows NT, Novell Netware). Responsible for OS installations, hardware upgrades, hardware installation, and user administration.

TEACHING
EXPERIENCE

Teaching Assistant , University of California, Riverside(2000 – 2001).

Courses: Design of Operating Systems, Computer Graphics, Web Site Construction, Principles of Programming Languages, Introduction to Artificial Intelligence.

Teaching Assistant , National Technical University of Athens(1998 – 2000).

Courses: Introduction to Computer Programming, Programming Techniques, Data Structures, Introduction to Databases.

PROFESSIONAL
ACTIVITIES

Journal referee for ACM Transactions on Database Systems (TODS), Very Large Databases Journal (VLDBJ), IEEE Transactions on Knowledge and Data Engineering (TKDE), Information Systems (IS), Information Processing Letters (IPL).

External referee for SIGMOD, VLDB, SSDBM, SSTD, ACM GIS, EDBT.

Publicity chair for SSTD 2001.

SKILLS

Excellent knowledge of:

- C, C++ (and STL), Java (and EJB), Visual C++ (and MFC, COM, DCOM), Python.

Very good knowledge of:

- HTML, Visual Basic, Perl, Ruby.

Had some experience with:

- Lisp, Haskell.

REFERENCES

Vassilis J. Tsotras

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Riverside, CA 92521
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Dimitrios Gunopulos

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George Kollios

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Erik Hoel

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Nikos Mamoulis

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University of Hong Kong
Pokfulam Road, Hong Kong
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