

# CURRICULUM VITAE

<b>Goce Trajcevski</b>	Department of Electrical Engineering and Computer Science, Robert R. McCormick School of Engineering Northwestern University L360 Technological Institute 2145 Sheridan Road Evanston, IL 60208-3118	Phone: (847) 491-7069 Fax: (847) 491-4455 Email: goce@eecs.northwestern.edu <a href="http://www.eecs.northwestern.edu/~goce">http://www.eecs.northwestern.edu/~goce</a>
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## EDUCATION

- PhD in Computer Science**      UNIVERSITY OF ILLINOIS AT CHICAGO, Chicago, IL  
2002      Department of Computer Science  
Thesis title: Managing Uncertainty in Moving Objects Databases  
Advisor: *Professor Ouri Wolfson*
- MS in Computer Science**      UNIVERSITY OF ILLINOIS AT CHICAGO, Chicago, IL  
1995      Department of Electrical Engineering and Computer Science  
Thesis title: Minimality of View Updates in Deductive Databases  
Advisor: *Professor Jorge Lobo*
- BS in Informatics and**      UNIVERSITY of Sts. KIRIL and METODIJ, Skopje, Macedonia  
**Automatics**      College of Engineering, Faculty of Electrical Engineering,  
1989      Department of Informatics and Automatics  
Graduated Summa Cum Laude

## EMPLOYMENT

- Assistant Chairman/Lecturer**      Northwestern University, Evanston, IL  
**9/2008 – present**      Department of Electrical Engineering and Computer Science  
**(Senior Lecturer as of June 2011)**
- Research Assistant Professor**      Northwestern University, Evanston, IL  
**(5/2007 – 9/1008)**      Department of Electrical Engineering and Computer Science.
- Research Associate**      Northwestern University, Evanston, IL  
**(10/2004 – 4/2007)**      Department of Electrical and Computer Engineering,  
Database Systems Laboratory,  
Director: Prof. Peter Scheuermann.
- Consultant**      Project: “Geometric Computing”  
**(11/2004 – 5/2005)**      Department of CIS, Polytechnic University, Brooklyn, NY  
Project Leader: Prof. Herve Bronnimann
- Post-Doctoral Research Fellow**      Northwestern University, Evanston, IL  
**(10/2003 – 9/2004)**      Department of Electrical and Computer Engineering,  
Database Systems Laboratory, Director: Prof. Peter Scheuermann
- System Administrator**      Database and Information Systems Laboratory,  
**(Fall 1999 – Spring 2001)**      Department of Computer Science, University of Illinois at  
Chicago
- Lecturer**      University of Illinois at Chicago, Chicago, IL  
**(6/1997 – 9/2003)**      Department of Computer Science (Dept. of EECS until 2000)

**Teaching Assistant**  
(8/1995 – 5/1997)

University of Illinois at Chicago, Chicago, IL  
Department of Electrical Engineering and Computer Science

**Research Assistant**  
(2/1992 – 5/1995)

University of Illinois at Chicago, Chicago, IL  
Department of Electrical Engineering and Computer Science  
Advisor: Prof. Jorge Lobo

**System Engineer**  
(7/1989 – 8/1991)

OP “Informatika i Elektronika”, Bitola, Macedonia

## RESEARCH INTERESTS

- **Mobile Data Management** (Spatio-Temporal Predicates, uncertainty)
- **Reactive Behavior** (Triggers, Distributed Queries, Streaming Data)
- **Wireless Sensor Networks** (Routing, Tracking, Security)
- *Broader High-Level Programming, Geometric Algorithms and Control*

## RESEARCH FUNDING

### • External Collaborator:

DAAD (German Exchange Academic Service)/PPP: Constraint Aware Uncertain Spatio-Temporal Data Management.

PI: Prof. Matthias Renz  
Ludwig Maximilian Univ.  
Munch, Germany

Total Funds: \$25,000.00 Euros

January 2013 – December 2014

### • Principal Investigator:

III: Collaborative: Moving Objects Databases for Exploration of Virtual and Real Environments  
National Science Foundation, \$300,000.00

collaborative with: UIC (PI: Ouri Wolfson),  
Brown Univ. (PI: Roberto Tamassia),  
Florida Int.l Univ. (PI: Naphtali Rishe)  
October 2012 – September 2017

Total Funds: \$3,000,000.00;

### • Principal Investigator:

Collaborative Integration of Heterogeneous Sensing, Actuation and Computing Devices (CIHSAC)  
Murphy Society Equipment Grant

Total Funds: \$65,289.00

September 2011 – August 2014

### • Principal Investigator:

NeTS: Collaborative: Context-Driven Management of Heterogeneous Sensor Networks  
National Science Foundation, \$680,000.00

collaborative with UIC (PI: Ashfaq Khokhar)  
September 2009 – August 2014

Total Fund: \$2,000,000.00;

- REU for the project “Context-Driven Management of Heterogeneous Sensor Networks”  
Total Funds: \$9,300.00 (September 2010 – August 2011)

### • Co-Principal Investigator

Triggers and Events for Performance Monitoring  
BEA Corporation,  
Total Fund: \$40,000;

PI: Peter Scheuermann  
August 2008 – December 2008

### • Co-Principal Investigator

Reactive Behavior and Data Reduction for Sensor Data Management

Northrop Grumman Corporation,  
Total Fund: \$345,000

PI: Peter Scheuermann  
June 2005 – December 2007.

• Senior Personnel

ITR: Collaborative: Context-Aware Computing With Application to Public Health Care Management  
National Science Foundation, \$2,100,000.00

PI: Isabel Cruz (University of Illinois at Chicago)  
September 2003 – August 2008

## AWARDS, HONORS and NOMINATIONS

- **Best Paper Award:** 11<sup>th</sup> International Conference on Mobile Data Management (MDM 2010), May 2010.
- **Best Paper Award:** 7<sup>th</sup> International Conference on Cooperative Information Systems (CoopIS 2000), September 2000.
- **1<sup>st</sup> Place in Physics Competition,** Annual Meeting of Colleges of Electrical Engineering (Elektriada), 1986.
- **US Geological Survey Scholar,** Fall 2000.
- **Best PhD Thesis Nominee,** University of Illinois at Chicago, 2003.
- **Best TA Nominee,** (Dept. of EECS), University of Illinois at Chicago, 1996.

□ Pre-Academic Achievements: Five times winner of the State Math Competition;

Ranked 1<sup>st</sup> in the National University Entrance Exam for Technical Colleges

(Approx. 30,000 applicants)

## PUBLICATIONS

### *Book Chapters and Encyclopediae Chapters*

- B1 D. Kotsakos, D. Gunopulos and G. Trajcevski. *Time Series Data Clustering*. In Data Clustering: Algorithms and Applications. Francis and Taylor, 2013 (to appear).
- B2 G. Trajcevski. *Uncertainty in Spatial Trajectories*. In Computing with Spatial Trajectories. Springer-Verlag, 2011.
- B3 G. Trajcevski and P. Scheuermann. *Active Database Systems*. Encyclopedia of Computer Science, John Willey, 2009.
- B4 G. Trajcevski, O. Wolfson and P. Scheuermann. *Compression of Mobile Location Data*. Encyclopedia of Database Systems, Springer-Verlag, 2009.
- B5 G. Trajcevski and P. Scheuermann. *Moving Objects Uncertainty*. Encyclopedia of GIS, Springer-Verlag, 2008.

### *Journals*

- J1 A. Yaagoub, , G. Trajcevski, X. Liu, E. Tanin and P. Scheuermann. Count Aggregates for Spatial Shapes via Materialized Index-Views. *Journal of Database Management (JDM)* – to appear as one of the four Best Papers selected from the ADBIS 2012 conference.
- J2 F. Zhou, G. Trajcevski, R. Tamassia, A. Khokhar and P. Scheuermann: Deflection-Aware Tracking Principals Selection in Active Wireless Sensor Networks. *IEEE Transactions on Vehicular Technology (IEEE-TVT)*, 2012 (accepted, to appear).
- J3 S. Yazji, P. Scheuermann, R. Dick, G. Trajcevski and R. Jin: Efficient Location Aware Intrusion Detection to Protect Mobile Devices. (*Special Issus on Security and Trust in Context-Aware Applications*) *Int.l Journal on Personal and Ubiquitous Computing (PUC – Springer)*, 2012 (accepted, to appear).

- J4 X. Wang, A. Mueen, H. Ding, G. Trajcevski, P. Scheuermann and E. Keogh: Experimental Comparison of Representation Methods and Distance Measures for Time Series Data. *Journal of Data Mining and Knowledge Discovery (DMKD – Springer)*, 2012 (accepted, to appear).
- J5 G. Trajcevski, R. Tamassia, I.F. Cruz, P. Scheuermann, D. Hartglass and C. Zamierowski: Ranking continuous nearest neighbors for uncertain trajectories. *International Journal on Very Large Databases (VLDBJ)*, 20(5), 2011.
- J6 O. Ghica, G. Trajcevski, P. Scheuermann, N. Valtchanov and Z. Bischoff: Controlled Multi-Path Routing in Wireless Sensor Networks Using Bezier Curves. *The Computer Journal*, 52(2), 2011.
- J7 X. Wang, H. Ding, G. Trajcevski, P. Scheuermann, E. Keogh: Experimental Comparison of Representation Methods and Distance Measures for Time Series Data [CoRR abs/1012.2789 \(2010\)](https://arxiv.org/abs/1012.2789)
- J8 O. Ghica, G. Trajcevski, U. Buy, O. Wolfson, F. Zhao, P. Scheuermann and D. Vaccaro: Trajectory Data Reduction in Wireless Sensor Networks. *International Journal on Next Generation Computing*, 1(1), 2010.
- J9 H. Ding, G. Trajcevski and P. Scheuermann: Efficient Maintenance of Spatio-Temporal Queries for Trajectories. *GeoInformatica Journal*, 12 (3), 2008.
- J10 H. Cao, O. Wolfson and G. Trajcevski: Spatio-Temporal Data Reduction with Deterministic Error Bounds. *International Journal on Very Large Databases (VLDBJ)*, 15(3), 2006.
- J11 G. Trajcevski, O. Wolfson, K. Hinrichs and S. Chamberlain: Managing Uncertainty in Moving Objects Databases. *ACM Transactions on Databases Systems (ACM TODS)*, 29(4), September 2004.
- J12 G. Trajcevski and P. Scheuermann: Reactive Maintenance of Continuous Queries. *ACM SIGMOBILE Mobile Computing and Communication Review*, 8(3), July 2004.
- J13 G. Trajcevski, C. Baral and J. Lobo. Formalizing and Reasoning About the Requirements Specifications in Workflow Management Systems. *International Journal on Cooperative Information Systems (IJCIS)*, 10(2), 2001.
- J14 J. Lobo and G. Trajcevski. Minimal and Consistent Evolution of Knowledge Bases. *Journal of Applied Non Classical Logic*, 7(1-2), January 1997.

### **Conferences and Workshops**

- C1 J. McClurg, G. Trajcevski and J. Yanutola. Collaborative Reactive Behavior in Heterogeneous Wireless Sensor Networks (demo-paper). *ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, November 2012.
- C2 M. Mohamed, A. Khokhar, G. Trajcevski, A. Ouksel and R. Ansari. Approximate Hybrid Query Processing in Wireless Sensor Networks. *ACM International Conference on Geographic Information Systems (ACM-GIS)*, November 2012.
- C3 G. Trajcevski, B. Avci, F. Zhou, R. Tamassia, P. Scheuermann, L. Miller and A. Barber. Motion Trends Detection in Wireless Sensor Networks. *IEEE International Conference on Mobile Data Management (MDM)*, July 2012.
- C4 A. Yaagoub, X. Liu, G. Trajcevski, E. Tanin and P. Scheuermann. Materialized Views for Count Aggregates of Spatial Data. *International Conference on Advancing Databases and Information Systems (ADBIS)*, September 2012.
- C5 A. Yaagoub, G. Trajcevski, P. Scheuermann and N. Hardavellas. Load-Balancing for Processing Spatio-Temporal Queries in Multi-Core Settings. *ACM Workshop on Data Engineering for Mobile and Wireless Access (MobiDE – in conjunction with the ACM SIGMOD conference)*, May 2012.
- C6 O. Ghica, C. Nita-Rotaru, G. Trajcevski and P. Scheuermann. Security of Electrostatic Field-Persistent Routing: Attacks and Defense Mechanisms. *European Dependable Computing Conference (EDCC)*, April 2012.

- C7 F. Zhou, G. Trajcevski, B. Avci and P. Scheuermann. Sensors Synchronization for Energy-Efficient Multiple Objects Tracking. *International Conference on Sensing, Networking and Computation (ICNSC)*, April 2012.
- C8 S. Wylie, J. Heide, D. Vaccaro, B. Avci, O. Ghica and G. Trajcevski. Distributed Data Management for Large-Scale Wireless Sensor Networks Simulation. *International Conference on Extending Database Technology (EDBT)*, March 2012.
- C9 D. Gunopoulos and G. Trajcevski: Similarity in (Spatial, Temporal and) Spatio-Temporal Datasets. *International Conference on Extending Database Technology (EDBT)*, March 2012.
- C10 G. Trajcevski. Collaborative Coupling of Sensing and Actuation: Uncertainty Beyond Querying. *IEEE International Conference on Collaborative Technologies and Systems (CTS)*, May 2012.
- C11 G. Trajcevski, F. Zhou, R. Tamassia, P. Scheuermann and B. Avci. Bypassing Holes in Sensor Networks: Load Balance vs. Latency. *IEEE Global Communications Conference (IEEE-GlobeCom)*, December 2011.
- C12 F. Zhou, G. Trajcevski and B. Avci. Tracking Coverage Through Epochs with Bounded Uncertainty. *IEEE International Symposium on Network Computing and Applications (IEEE-NCA)*, August 2011.
- C13 G. Trajcevski, A. Yaagoub and P. Scheuermann. Processing (Multiple) Spatio-temporal Range Queries in Multicore Settings. *International Conference on Advances in Databases and Information Systems (ADBIS)*, September 2011.
- C14 G. Trajcevski, A. Yaagoub and P. Scheuermann. Towards Multicore Processing of Spatio-Temporal Range Queries. *IEEE International Conference on Mobile Data Management (MDM)*, June 2011.
- C15 K. Zheng, G. Trajcevski, H. Zhou and P. Scheuermann. Probabilistic Range Queries for Uncertain Trajectories on Road Networks. *International Conference on Extending Database Technology (EDBT)*, March 2011.
- C16 F. Lu, R. Joseph, G. Trajcevski and S. Liu. Efficient Parameter Variation Sampling for Architecture Simulations, *Design, Automation and Test in Europe (DATE) Conference*, March 2011.
- C17 S. Yazji, R. Dick, P. Scheuermann and G. Trajcevski. Protecting Private Data on Mobile Systems Based on Spatio-Temporal Analysis, *International Conference on Pervasive and Embedded Computing and Communication Systems (PECCS)*, March 2011.
- C18 S. Yazji, R. Dick, P. Scheuermann and G. Trajcevski. Protecting Mobile Data Using Spatio-Temporal Mobility Pattern (poster), *International ICST Conference on Mobile and Ubiquitous Systems (MobiQuitus)*, December 2010.
- C19 G. Trajcevski, O. Ghica, M. Zuniga, R. Schubotz, P. Scheuermann and M. Hauswirth. Large-Scale Simulation of (Improved) Field Based Routing in Wireless Sensor Networks with SIDnet-SWANS (demo). *IEEE Global Communications Conference (IEEE-GlobeCom)*, December 2010.
- C20 O. Ghica, G. Trajcevski, R. Tamassia, F. Zhou and P. Scheuermann. Selecting Tracking Principals with Epoch Awareness. *ACM International Conference on Geographic Information Systems (ACM-GIS)*, November 2010.
- C21 G. Trajcevski, O. Ghica, M. Zuniga, R. Schubotz, P. Scheuermann and M. Hauswirth. Improving the Energy Balance of Field Based Routing. *IEEE Global Communications Conference (IEEE-GlobeCom)*, December 2010.
- C22 G. Trajcevski, A. Choudhary, O. Wolfson, L. Ye and G. Li. Uncertain Range Queries for Necklaces. *IEEE International Conference on Mobile Data Management (MDM)*, May 2010. **Note: Best Paper Award.**
- C23 G. Trajcevski, O. Ghica, P. Scheuermann. Tracking-Based Trajectory Data Reduction in Wireless Sensor Networks. *IEEE International Symposium on Sensing, Ubiquitous and Trustworthy Computing (IEEE-SUTC)*, June 2010.
- C24 G. Trajcevski, A. Choudhary and P. Scheuermann. Sensing, Triggers and Mobile (Meta)Data. *International Workshop on Mobile P2P Data Management, Security and Trust (M-PDMST)*, May 2010.

- C25 G. Trajcevski, Z. Bischof and P. Scheuermann. Range Queries for Mobile Objects in Wireless Sensor Networks. *ACM International Conference on Geographic Information Systems (ACM-GIS)*, November 2009.
- C26 G. Trajcevski, N. Valtchanov, O. Ghica and P. Scheuermann. A Case for Meta Triggers in Wireless Sensor Networks. *IEEE International Symposium on Network Computing and Applications (IEEE-NCA)*, 2009.
- C27 G. Trajcevski and A. Choudhary. Data-Aware Control  $\Rightarrow$  Efficient Traffic Management. *NSF- Next Generation Data Mining Summit (NGDM)*, April 2009.
- C28 G. Trajcevski and P. Scheuermann. Managing Context Evolutions in Pervasive Environments. *International Conference on Pervasive Technologies Related to Assistive Environments (PETRA)* 2009.
- C29 G. Trajcevski and P. Scheuermann. (Reactive + Proactive Behavior)  $\Rightarrow$  Situation Awareness in Sensor Networks. *Workshop on Research Directions in Situational-aware Self-managed Proactive Computing in Wireless Adhoc Networks*, April 2009.
- C30 G. Trajcevski, R. Tamassia, H. Ding, P. Scheuermann and I. Cruz. Continuous Probabilistic Nearest-Neighbor Queries for Uncertain Trajectories. *International Conference on Extending Database Technology (EDBT)*, March 2009
- C31 O. Ghica, G. Trajcevski, P. Scheuermann, Z. Bischof and N. Valtchanov. SIDnet-SWANS: a Simulator and Integrated Development Platform for Sensor Networks Applications (demo), *ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, November 2008.
- C32 G. Trajcevski, O. Ghica, P. Scheuermann, R. Tamassia and I. Cruz. An Alternating Multiple Tributaries and Deltas, *International Workshop on Data Management in Sensor Networks (DMSN)*, August 2008.
- C33 H. Ding, G. Trajcevski, P. Scheuermann, X. Wang and E. Keogh. Querying and Mining of Time Series Data: Experimental Comparison of Representations and Distance Measures. *International Conference on Very Large Databases (VLDB)*, August 2008.
- C34 H. Ding, G. Trajcevski and P. Scheuermann. . Efficient Similarity Join of Large Sets of Moving Objects Trajectories. *International Symposium on Temporal Representation and Reasoning (TIME)*, June 2008.
- C35 G. Trajcevski, H. Ding, P. Scheuermann, R. Tamassia and D. Vaccaro. Dynamics-Aware Similarity of Moving Objects Trajectories. *ACM International Conference on Geographic Information Systems (ACMGIS)*, November 2007.
- C36 G. Trajcevski, H. Ding, P. Scheuermann and I. Cruz. BORA: Routing and Aggregation in Distributed Moving Objects Databases. *International Conference on Mobile Data Management (MDM)*, May 2007.
- C37 G. Trajcevski and P. Scheuermann. Adaptive and Context-Aware Reconciliation of Reactive Behavior with Pro-Active Consequences. *Active Conceptual Modeling and Learning (ACM-L)*, October 2006.
- C38 G. Trajcevski, H. Cao, O. Wolfson, P. Scheuermann, D. Vaccaro. On-Line Data Reduction and the Quality of History in Moving Objects Databases. *ACM Workshop on Data Engineering for Mobile and Wireless Access (MobiDE – in conjunction with the ACM SIGMOD conference)*, June 2005
- C39 G. Trajcevski, I. Cruz and P. Scheuermann. Moving Volumes, Sensors and Reactive Behavior. *NCGIS Specialist Meetings*, June 2006.
- C40 H. Ding, G. Trajcevski and P. Scheuermann. **OMCAT: Optimal Maintenance of Continuous Queries' Answers for Trajectories.** *ACM International Conference on Management of Data (SIGMOD)*, June 2006

- C41 O. Ghica, G. Trajcevski and P. Scheuermann. Adaptive Multi-Routing and Sensor Networks Lifetime. *Information Processing in Sensor Network (IPSN) - WiP workshop, April 2006.*
- C42 G. Trajcevski, O. Ghica and P. Scheuermann. **CAR: Controlled Adjustment of Routes and Sensor Networks Lifetime.** *International Conference on Mobile Data Management (MDM), May 2006.*
- C43 G. Trajcevski, P. Scheuermann, O. Ghica, A. Hinze and A. Voisard. Evolving Triggers for Dynamic Environments, *International Conference on Extending Database Technology (EDBT), March 2006.*
- C44 G. Trajcevski, H. Ding and P. Scheuermann. Context-Aware Optimization of Continuous Range Queries for Trajectories. *ACM Workshop on Data Engineering for Mobile and Wireless Access (MobiDE – in conjunction with the ACM SIGMOD conference), June 2005.*
- C45 G. Trajcevski, P. Scheuermann, H. Bronnimann and A. Voisard. Dynamic Topological Predicates and Notifications in Moving Objects Databases. *International Conference on Mobile Data Management (MDM), May 2005.*
- C46 G. Trajcevski, P. Scheuermann and H. Bronnimann. Mission-Critical Management of Mobile Sensors (or, How to Guide a Flock of Sensors). *International Workshop on Data Management in Sensor Networks (DMSN – in conjunction with the VLDB Conference), August 2004.*
- C47 G. Trajcevski, P. Scheuermann, O. Wolfson and N. Nedungadi, **CAT: Correct Answers of Continuous Queries using Triggers,** *International Conference on Extending Database Technology (EDBT), March 2004.*
- C48 G. Trajcevski. Probabilistic Range Queries in Moving Objects Databases with Uncertainty, *International ACM Workshop on Wireless and Mobile Access (MobiDE - in conjunction with the MobiCom conference), September 2003.*
- C49 H. Cao, O. Wolfson and G. Trajcevski. Spatio-Temporal Data Reduction with Deterministic Error Bounds. *DIALM-POMC Joint Workshop on Foundations of Mobile Computing (in conjunction with the MobiCom conference), September 2003.*
- C50 G. Trajcevski and P. Scheuermann. Triggers and Continuous Queries in Moving Objects Databases. *International Workshop on Mobility in Databases and Distributed Systems (MDDS - in conjunction with the DEXA conference), September 2003.*
- C51 G. Trajcevski, O. Wolfson, B. Xu and P. Nelson. Real-Time Traffic Updates in Moving Objects Databases. *International Workshop on Mobility in Databases and Distributed Systems (MDDS - in conjunction with the DEXA conference), September 2002.*
- C52 G. Trajcevski, O. Wolfson, H. Cao, H. Lin, F. Zhang and N. Rische. Managing Uncertain Trajectories of Moving Objects with DOMINO. *International Conference on Enterprise Information Systems (ICEIS), April 2002.*
- C53 O. Wolfson, H. Cao, H. Lin, G. Trajcevski, F. Zhang and N. Rische. Management of Dynamic Location Information in DOMINO. *International Conference on Extending Database Technology (EDBT), March 2002.*
- C54 G. Trajcevski, O. Wolfson, F. Zhang and S. Chamberlain. The Geometry of Uncertainty in Moving Objects Databases. *International Conference on Extending Database Technology (EDBT), March 2002.*
- C55 G. Trajcevski, O. Wolfson and B. Xu. Research Directions in Moving Objects Databases. *International Conference on Geographic Information Science (GIScience), November 2000.*
- C56 G. Trajcevski, C. Baral and J. Lobo. Formalizing (and Reasoning About) the Specifications of Workflows. *International Conference on Cooperative Information Systems (CoopIS), September 2000. (NOTE: Best Paper Award)*
- C57 G. Trajcevski, C. Baral and J. Lobo. Formalizing Workflows as Collections of Condition-Action Rules (Poster Paper). *NATO-ASI: Workflow Management and Interoperability, August 1997*

- C58 C. Baral, J. Lobo and G. Trajcevski. Formal Characterization of Active Databases: Part II. *International Conference on Deductive and Object-Oriented Databases (DOOD), December C1997.*
- C59 G. Trajcevski, J. Lobo and N. Grover. Meta Updater: An Interactive Tool for Minimal View Updates in Knowledge Bases. *IEEE International Conference on Tools With Artificial Intelligence (TAI), November 1996.*

## PROTOTYPES

### • Compiling Triggers for Heterogeneous Sensor Networks

Extending the concept of meta-triggers [C26], this tool enables the users to specify database-like triggers for wireless sensor networks and identify regions of interest for the events, conditions and actions. Subsequently, the specifications are compiled into corresponding binaries for different types of motes. As part of the MS thesis work of Jed McClurg, the tool and the compiler were demonstrated at the ACM SenSys 2012 [C1].

### • SIDnet-SWANS (Simulator with Integrated Development Environment based on SWANS)

The simulator provides an environment where different routing strategies as well as query processing methodologies can be tested in a large-scale network. Built upon the SN-Sim platform (which was developed as part of the MS Thesis work of Oliviu Ghica [C42,J5]), the simulator provides various graphical interfaces, and abilities to “fast-forward” the execution, display energy-map; interactively “kill” nodes in a chosen region (to simulate hole-generation), modeling of different fluctuations of phenomena of interest, as well as the option to declaratively specify queries as a subset of Tiny-SQL language (demonstrated at ACM SenSys 2008 [C31]).

### • OMCAT (Optimizing the Maintenance of Correct Answers to Continuous Queries Using Triggers)

Continuing the CAT project [C47] and augmenting it with the ideas in [J12], the OMCAT system utilizes some of the semantic dimensions of the Oracle 10g ORDBMS triggers (e.g., *set vs. tuple; before vs. after* execution) and greatly improves the efficiency of the CAT. In addition, algorithmic solutions were added for orchestrating the execution of the triggers based on Z-curve ordering. The demo was presented in SIGMOD 2006 [C40], and the methodologies that became an MS Thesis work of Hui Ding were published in [J9].

### • DOMINO (Database fOr MovINg Objects)

Participated in the implementation of the DOMINO system, which had already been underway when I joined the team of Prof. Ouri Wolfson as a PhD student. My tasks were in implementing the algorithms for Spatio-temporal range-queries processing (+ uncertainty) in both ver.1 (Informix) and ver.2. (Oracle 8i). Related publications appeared in [C53,C55]

### • Meta-Updater

*Prolog* implementation of the research results during my MS Thesis work at UIC, published in [J14]. The implementation interfacing the Meta-Updater module with a Tcl/Tk based GUI was published in [C59].

## TEACHING

Northwestern University

- Co-developed EECS 369;
- Developed two special topics courses (EECS 395/495);
- Reorganized EECS 230 and EECS 317;
- EECS 211 *Fundamentals of Computer Programming II*
- EECS 230 *Introduction to Programming for Engineers*
- EECS 317 *Data Management and Information Processing*
- EECS 369 *Introduction to Sensor Networks*
- EECS 311 *Data Structures and Algorithms*
- EECS 491 (MSIT-Program) *Wireless Sensor Networks*
- EECS 213 *Introduction to Systems Programming*
- EECS 395/495 *Computational Geometry*
- EECS 395/495 *Object-Oriented Languages and Environments*

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University of Illinois at Chicago

- CS201 (former EECS260) *Foundations of Computer Science*
- CS202 (former EECS360) *Data Structures and Algorithms*
- CS301 (former EECS361) *Languages and Automata*
- CS340 (former EECS370) *Software Design*
- CS385 (former EECS370) *Operating Systems Concepts and Design*
- CS474 *Object-Oriented Programming Languages and Environments*
  - o CS475 (on-line version of CS474)
- CS513 (former EECS583) *Databases and Logic Programming*
- CS581 *Database Management Systems*

## UNIVERSITY and DEPARTMENTAL SERVICES

### Graduate Admission

- *In charge of MS Admissions for the EECS department*
  - Overall revenue increase in excess of \$6M between 2009 and 2012
  - Overall increase in applications from ~100 to 700+ between 2009 and 2012. Highly increased the overall quality of admitted students
  - Provide advisee-adviser matching for MS applicants before admission offer (18 of students originally admitted as MS promoted to PhD)
- *Collaborate with the administration at McCormick School of Engineering and Applied Sciences, and TGS (The Graduate School) throughout different stages of MS admission*
- *Assisting the Graduate Committee with PhD Admissions*
- *Overseeing the activities of the graduate office throughout the lifecycle of MS students and collaborate with McCormick and TGS administration on variety of issues*

### Committees

- *CS Curriculum*
- *Computing Facilities*
- *Graduate Committee*
- *CE Curriculum*
- *Undergraduate recruitment*
  - Actively participated in the process of recruiting and monitoring CS major/minor students from Weinberg School of Liberal Arts and Sciences
  - Actively participated in the process of formalizing the CS-minor (along with EE/CE minors) in the programs at the McCormick School of Engineering
  - Freshmen advising for three years
  - Advising 8-10 undergraduate students per year
  - Involved in various events related to industry visits, orientations for undecided students, recruitment (Microsoft Passport initiative)

## MENTORING

### PhD

- Besim Avci (started Fall 2010)

- Students**
- Anan Yaagoub (Started Winter 2011)
  - Jed McClurg – (started Fall 2011)
  - Oliviu Ghica
    - co-advised with Peter Scheuermann
    - Dissertation defended May 2011
  - Hui Ding
    - co-advised with Peter Scheuermann
    - Dissertation defended May 2008
  - Sausan Yazji
    - co-advised with Peter Scheuermann and Robert Dick
    - Dissertation Defended Jun 2011
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- MS Students**
- MS Thesis
    - Maxim Kondratyev (UIC, 2002)
    - Gang Li (Northwestern, 2010)
  - MS Project
    - Nimesh Nedungadi (UIC 2003)
    - Bharath Suranjan (UIC 2007)
    - Stephen Wiley (Northwestern, 2011)
    - Jesse Yanutola (Northwestern, 2012)
  - Supervising 20 MS students in their course work
  - Supervising 8 MS students in EECS 490 (individual study)
- 

Participated in numerous examination committees spanning from MS Thesis defense, MS Project defense, to PhD Qualifier exam and PhD Prospectus exam

## PROFESSIONAL SERVICE

### General co-Chair

IEEE International Conference on Data Engineering (ICDE) – April, 2014

### Program Committee co-Chair

International Conference on Advanced in Databases and Information Systems (ADBIS co-Chair), September 2014

### Local Chair

ACM SIGMOD (2006); ACM GIS (2011 and 2012)

**Advanced Seminars Chair** IEEE MDM 2012

**PhD Colloquium Chair** IEEE MDM 2011

### Technical Program Committee Member

- 2012: ACM GIS Conference; ADBIS Conference, IEEE MDM Conference, ODBASE Conference, ACM MobiDE workshop, ICNSC Conference, SRDS Symposium, IWCTS workshop, CDRM Workshop.

- 2011: ACM GIS Conference; SSTD Symposium , ACM MobiDE Workshop, IEEE PerCoSC Workshop, IEEE ICDCN-SESA Workshop, IEEE-CTS Conference, IEEE M-PDMST Workshop, IEEE-NCA Symposium, IEEE ISPA Symposium, ACM DMSN Workshop (VLDB), IWCTS Workshop (GIS), SAHNS Workshop (ICDCS), LBSN Workshop (GIS).

- 2010: IEEE-ICNSC Conference, ACM-GIS Conference, VLDB-DMSN Workshop, ACM-MobiDE Workshop, IEEE-NCA Symposium, GeoScience Conference.

- 2009: IEEE MDM Conference, VLDB Conference, ACM MobiDE Workshop, VLDB-DMSN Workshop 2009, ACM GIS Conference.
  - 2008: ACM GIS Conference, ACM MobiDE Workshop, IEEE-AINA Conference, IEEE-MDM M-PDMST Workshop.
  - 2007: IEEE MDM Conference, OTM Federated Conference (CAMS), ACM GIS Conference, IEEE MDM M-PDMST Workshop, IEEE SAHNS Workshop, ACM MobiDE Workshop.
  - 2006: ACM GIS Conference, EDA-PS Conference, ACM DEBS Conference, SSTD Symposium.
  - 2005: IEEE MDM M-PDMST Workshop, OTM Federated Conference (CAMS).
- (External Reviewer in numerous conferences and workshops)

### **Journals Review**

- Very Large Databases Journal (2012)
- GeoInformatica Journal (2012)
- Computer Science and Information Systems (2012)
- Journal on Wireless Networks (WINET – 2012)
- IEEE Transactions on Data and Knowledge Engineering (2012) (x2)
- IEEE Transactions on Image Processing (2012)
- Very Large Databases Journal (2011)
- IEEE Transactions on Data and Knowledge Engineering (2011)
- IEEE Transactions on Image Processing (2011)
- GeoInformatica Journal (2011)
- Very Large Databases Journal (2010/2011)
- ACM/IEEE Transactions on Mobile Computing (2010)
- International Journal on Spatial Information Systems (2010)
- WINET Wireless Networks (2010)
- ACM Transactions on Pattern Analysis and Machine Intelligence (2010)
- International Journal on Distributed and Parallel Databases (2010)
- ACM/IEEE Transactions on Mobile Computing (2010)
- IEEE Transactions on Knowledge and Data Engineering (2010)
- Information Systems Journal (2008/2009)
- ACM Transactions on Computational Logic (2008)
- ACM Transactions on Information Systems (2008)
- ACM Transactions on Database Systems (2006/2007)
- ACM Transactions on Database Systems (2005/2006)
- IEEE Transactions on Knowledge and Data Engineering (2008/2009)
- IEEE Transactions on Knowledge and Data Engineering (2007/2008)
- IEEE Transactions on Knowledge and Data Engineering (2005/2006)
- WINET Wireless Networks (2005 and 2006)
- The Computer Journal (2005)

### **TUTORIALS, PANELS and INVITED TALKS**

- **Tutorial:** *On the Similarity of (Spatial, Temporal and) Spatio-Temporal Datasets* (with Dimitris Gunopoulou, University of Athens), EDBT Conference, March 2012.
- **Tutorial:** *On the Similarity of Motions* (with Dimitris Gunopoulou, University of Athens), MDM Conference, May 2010.
- **Panelist:** *Collaborative Technologies and Big Data*, CTS Symposium, May 2012.
- **Panel Mediator:** *Wireless Sensor Networks and Collaboration Across Heterogeneous Environments: Challenges and Opportunities*, CTS Symposium, April 2010.
- **Panel Mediator:** *PhD Colloquium*, MDM Conference, June 2011

- **Panelist:** *Context Prediction and Adaptation in Pervasive Computing*, MDM Conference, May 2010.
- *Moving Objects Databases and Computational Geometry* (Invited Talk – Brooklyn Polytechnic Institute, May 2004).
- *Dynamic Topological Predicates and Reactive Behavior* (Invited Talk – Purdue University, November 2004).
- *Context-Aware Management of Reactive Behavior in Dynamic Environments* (Invited Talk – Northrop-Grumman Research Labs, December 2006).
- *Dynamics-Aware Similarity of Motions and its impact on Trajectory Clustering* (Invited Talk – Rutgers University, December 2008).
- *On Meta-Management of Spatio-Temporal Data* (Invited Talk – IGERT Seminar Series, UIC, September 2009).
- *Sensing, Triggers and Mobile Meta-Data* (Invited Talk – M-PDMST Workshop, May 2010).
- *Collaborative Coupling of Sensing and Actuation: Uncertainty Beyond Querying* (Invited Talk – CTS, May 2012).

## PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM)  
Institute of Electrical and Electronics Engineers (IEEE)

## IMMIGRATION STATUS

Permanent US Resident

## REFERENCES

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