

CURRICULUM VITAE

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EDUCATION

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

EMPLOYMENT

Assistant Chairman/Senior Lecturer 9/2008 – present (Lecturer until 6/2011)	Northwestern University, Evanston, IL Department of Electrical Engineering and Computer Science
Research Assistant Professor (5/2007 – 9/2008)	Northwestern University, Evanston, IL Department of Electrical Engineering and Computer Science.
Research Associate (10/2005 – 4/2007)	Northwestern University, Evanston, IL Department of Electrical and Computer Engineering, Database Systems Laboratory, Director: Prof. Peter Scheuermann.
Consultant (11/2004 – 5/2005)	Project: “Geometric Computing” Department of CIS, Polytechnic University, Brooklyn, NY Project Leader: Prof. Herve Bronnimann
Post-Doctoral Research Fellow (10/2003 – 9/2004)	Northwestern University, Evanston, IL Department of Electrical and Computer Engineering, Database Systems Laboratory, Director: Prof. Peter Scheuermann
System Administrator (Fall 1999 – Spring 2001)	Database and Information Systems Laboratory, Department of Computer Science, University of Illinois at Chicago
Lecturer (6/1997 – 9/2003)	University of Illinois at Chicago, Chicago, IL 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
(8/1992 – 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 and Geo Data Analytics** (Spatio-Temporal Queries and Predicates, Uncertainty, Warehousing, Compression)
- **Reactive Behavior in Cyber-Physical Systems** (Evolving Triggers, Streaming Data)
- **Wireless Sensor Networks** (Routing, Tracking, Querying, Security)
- *Broader – Geometric Algorithms and Control*

RESEARCH FUNDING

• Principal Investigator:

Maps, Sensors and Compressed Data Fusion in Autonomous Driving.
HERE Chicago

Total Funds: \$38,000.00

November 2016 – October 2017

• Principal Investigator:

CPS: Synergy: Collaborative Research: Mapping and Querying Underground Infrastructure Systems.
National Science Foundation, \$185,000.00

collaborative with: UIC (PI: Isabel Cruz
Co-PIs: Sybil Derrible and Mike Siciliano),
Brown Univ. (PI: Roberto Tamassia)

Total Funds: \$800,000.00;

• (External) Co-Principal Investigator:

DAAD (German Exchange Academic Service)/PPP: Novel Models for Efficiently Managing
Uncertainty in Spatiotemporal Data.

PI: Dr. Tobias Emrich
Ludwig Maximilian Univ.
Munich, Germany

Total Funds: \$20,000.00

October 2015 – September 2017

• Co-Principal Investigator:

Cutset Sampling Topologies for Intelligence, Surveillance and Reconnaissance.
Office of Naval Research, \$250,000.00

PI: Thrasos Pappas
Collaborative with University of Michigan
PI: David Neuhoff

Total Funds: \$800,000.00;

May 2014 – April 2018

• (External) Co-Principal Investigator:

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

PI: Prof. Matthias Renz

Ludwig Maximilian Univ.
Munich, Germany

January 2013 – December 2014

Total Funds: \$25,000.00

• 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)

Total Fund: \$2,000,000.00;

September 2009 – August 2014

- 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: \$345,000.00

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 Teacher Award:** June 2014, EECS – Northwestern University
- **Favorite Teacher Award:** June 2014, MSiA (Masters of Science in Analytics) program, Northwestern University.
- **Best Short Paper Award:** 16th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems, November 2013.
- **Best Paper Award:** 11th International Conference on Mobile Data Management (IEEE MDM 2010), May 2010.
- **Best Paper Award:** 7th International Conference on Cooperative Information Systems (CoopIS 2000), September 2000.
- **US Geological Survey Scholar,** Fall 2000.
- **Best PhD Thesis Nominee,** University of Illinois at Chicago, 2003.

- **1st Place in Physics Competition**, Annual Meeting of Colleges of Electrical Engineering (Elektriada), 1986.
- Pre-Academic Achievements: Five times winner of the State Math Competitions; Ranked 1st in the National University Entrance Exam for Engineering Colleges (Approx. 3,000 applicants)

PUBLICATIONS

Book Chapters and Encyclopediae Chapters

- B1* D. Kotsakos, G. Trajcevski, D. Gunopulos and C. Aggarwal. *Time Series Data Clustering*. In *Data Clustering: Algorithms and Applications*. Francis and Taylor, 2013.
- 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* B. Avci, G. Trajcevski, R. Tamassia, F. Zhou and P. Scheuermann. Efficient Detection of Motion-Trend Predicates in Wireless Sensor Networks. *Computer Communications Journal*, (accepted, to appear), 2016.
- J2* Y. Xie, Z. Chen, D. Palsetia, G. Trajcevski, A. Agarwal and A. Choudhary. SILVERBACK+: Scalable Association Mining via Fast List Intersection for Columnar Social Data. *Knowledge and Information Systems*, (accepted, to appear), 2016.
- J3* B. Zhang, G. Trajcevski and L. Liu. Towards Fusing Uncertain Location Data From Heterogeneous Sources. *GeoInformatica*, 20(2), 2016.
- J4* O. Ghica, C. Nita-Rotaru, G. Trajcevski and P. Scheuermann. Security of Electrostatic Field Persistent Routing: Attacks and Defense Mechanisms. *Ad Hoc Networks*, 36(1), 2016.
- J5* M. Ali, A. Khokhar and G. Trajcevski. Energy Efficient Data Indexing and Query Processing for Static and Mobile Wireless Sensor Networks. *International Journal on Next Generation Computing*, 6(2), 2015.
- J6* S. Yazji, P. Scheuermann, R. Dick, G. Trajcevski and R. Jin. Efficient Location Aware Intrusion Detection to Protect Mobile Devices. (*Special Issue on Security and Trust in Context-Aware Applications*) *Int.l Journal on Personal and Ubiquitous Computing (PUC – Springer)*, 18(1), 2014.
- J7* 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)*, 26(2), 2013.
- J8* 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)*, 61(7), 2012.
- J9* 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.
- J10* 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.

- J11 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.
- J12 H. Ding, G. Trajcevski and P. Scheuermann: Efficient Maintenance of Spatio-Temporal Queries for Trajectories. *GeoInformatica Journal*, 12 (3), 2008.
- J13 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.
- J14 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.
- J15 G. Trajcevski and P. Scheuermann: Reactive Maintenance of Continuous Queries. *ACM SIGMOBILE Mobile Computing and Communication Review*, 8(3), July 2004.
- J16 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.
- J17 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 M. Hussain, G. Trajcevski, K. A. Islam and E. Ali. Towards Efficient Maintenance of Continuous MaxRS Query for Trajectories. *International Conference on Extending Database Technology (EDBT)*, (accepted, to appear), March 2017.
- C2 P. Wongse-ammatt, M. Hussain, G. Trajcevski, B. Avci and A. Khokhar. Distributed In-network Processing of k-MaxRS in Wireless Sensor Networks. *International Conference on Sensor Networks (SENSORNETS)*, (accepted, to appear), February 2017.
- C3 B. Avci, G. Trajcevski and P. Scheuermann. Tracking Uncertain Shapes with Probabilistic Bounds in Sensor Networks. *International Conference on Advancing Databases and Information Systems (ADBIS)*, August 2016.
- C4 B. Zhang, G. Trajcevski and F. Liu. Clustering Speed in Multi-lane Traffic Networks. *International Conference on Information and Knowledge Management (CIKM)*, October 2016.
- C5 M. Hussain, B. Avci, G. Trajcevski and P. Scheuermann. Incorporating Weather Updates for Public Transportation Users of Recommendation Systems. *IEEE International Conference on Mobile Data Management (MDM)*, June 2016.
- C6 M. Hussain, P. Wongse-Ammatt and G. Trajcevski. Distributed MaxRS in Wireless Sensor Networks (demo-paper). *ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, November 2015.
- C7 G. Trajcevski, I. Donevska, A. Vaisman, B. Avci, T. Zhang and D. Tian. "Semantics-Aware Warehousing of Symbolic Trajectories". *6th ACM SIGSPATIAL International Workshop on GeoStreaming (IWGS)*, November 2015.
- C8 A. Zang, X. Cheng and G. Trajcevski. "Digital Terrain Model Generation using LiDAR Ground Points". *International ACM SIGSPATIAL Workshop on Smart Cities and Urban Analytics (UrbanGIS)*, November 2015.
- C9 M. Mauder, M. Reisinger, T. Emrich, A. Zuefle, M. Renz, G. Trajcevski and R. Tamassia. "Minimal Spatio-Temporal Database Repairs". *Int.l Symposium on Spatial and Temporal Databases (SSTD)*, August 2015.
- C10 M. Maruseac, G. Ghinita, B. Avci, G. Trajcevski and P. Scheuermann. "Privacy-Preserving Detection of Anomalous Phenomena in Crowdsourced Environmental Sensing". *Int.l Symposium on Spatial and Temporal Databases (SSTD)*, August 2015.

- C11 B. Zhang and G. Trajcevski. “The Tale of (Fusing) Two Uncertainties”. *International Conference on Geographic Information Systems (ACM SIGSPATIAL GIS)*, November 2014.
- C12 B. Avci, M. Hussain, B. Zhang and G. Trajcevski. “Evolving Shapes in Wireless Sensor Networks” (demo-paper). *ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, November 2014.
- C13 H. Xie, E. Tanin, L. Kulik, P. Scheuermann, G. Trajcevski and M. Fanaeepour. “Euler Histogram Tree: A Spatial Data Structure for Aggregate Range Queries on Vehicle Trajectories”. *International Workshop on Computational Transportation Science (in conjunction with ACM SIGSPATIAL GIS2014)*, November 2014.
- C14 M. Mohamed, A. Khokhar and G. Trajcevski. “Energy Efficient Resource Distribution for Mobile Wireless Sensor Networks”. *International Workshop on Crowdsourcing in Mobile and Wireless Sensor Networks (in conjunction with IEEE MDM 2014)*, July 2014.
- C15 B. Avci, G. Trajcevski and P. Scheuermann. “Managing Evolving Shapes in Sensor Networks”. *International Conference on Scientific and Statistical Database Management (SSDBM)*, June 2014.
- C16 Y. Xie, D. Palsetia, Y. Cheng, A. Agrawal, G. Trajcevski, A. Choudhary. “Silverback: Scalable Association Mining for Temporal Data in Columnar Probabilistic Databases”. *IEEE International Conference on Data Engineering (ICDE) – Industry Track*, April 2014.
- C17 X. Sung, A. Yaagoub, G. Trajcevski, H. Chen, P. Scheuermann and A. Chavalla. “P2EST: Parallelization Philosophies for Evaluating Spatio-Temporal Queries”. *BIGSPATIAL 2013 Workshop (in conjunction with ACM SIGSPATIAL GIS2013)*. November 2013.
- C18 M. Mohamed, A. Khokhar and G. Trajcevski. “Voronoi Trees for Hierarchical In-Network Data and Space Abstractions in Wireless Sensor Networks”. *ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems*. November, 2013. **Note: Best Short Paper Award**
- C19 M. Mauder, T. Emrich, A. Zufle, G. Trajcevski, M. Renz and H.-P. Kriegel. “Minimal Spatio-Temporal Database Repairs”. *ACM International Conference on Geographic Information Systems (ACM GIS)*, November 2013.
- C20 M. Mohamed, A. Khokhar and G. Trajcevski. “Energy Efficient In-Network Data Indexing for Mobile Wireless Sensor Networks”. *Int.l Symposium on Spatial and Temporal Databases (SSTD)*, August 2013.
- C21 G. Trajcevski. On the Links Between “D” and “A” in Mobile Data Analytics. *IEEE Workshop on Mobile Data Analytics (MODA – in conjunction with IEEE ICDE)*, April 2013.
- C22 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.
- C23 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.
- C24 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.
- C25 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.
- C26 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.
- C27 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.

- C28 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.
- C29 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.
- C30 D. Gunopoulos and G. Trajcevski: Similarity in (Spatial, Temporal and) Spatio-Temporal Datasets. *International Conference on Extending Database Technology (EDBT)*, March 2012.
- C31 G. Trajcevski. Collaborative Coupling of Sensing and Actuation: Uncertainty Beyond Querying. *IEEE International Conference on Collaborative Technologies and Systems (CTS)*, May 2012.
- C32 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.
- C33 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.
- C34 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.
- C35 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.
- C36 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.
- C37 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.
- C38 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.
- C39 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.
- C40 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.
- C41 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.
- C42 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.
- C43 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.**
- C44 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.

- C45 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.
- C46 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.
- C47 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.
- C48 G. Trajcevski and A. Choudhary. Data-Aware Control \Rightarrow Efficient Traffic Management. *NSF- Next Generation Data Mining Summit (NGDM)*, April 2009.
- C49 G. Trajcevski and P. Scheuermann. Managing Context Evolutions in Pervasive Environments. *International Conference on Pervasive Technologies Related to Assistive Environments (PETRA)* 2009.
- C50 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.
- C51 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.
- C52 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.
- C53 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.
- C54 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.
- C55 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.
- C56 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.
- C57 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.
- C58 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.
- C59 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 2006.
- C60 G. Trajcevski, I. Cruz and P. Scheuermann. Moving Volumes, Sensors and Reactive Behavior. *NCGIS Specialist Meetings*, June 2006.

- C61 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.
- C62 O. Ghica, G. Trajcevski and P. Scheuermann. Adaptive Multi-Routing and Sensor Networks Lifetime. *Information Processing in Sensor Network (IPSN) - WiP workshop*, April 2006.
- C63 G. Trajcevski, O. Ghica and P. Scheuermann. **CAR: Controlled Adjustment of Routes and Sensor Networks Lifetime.** *IEEE International Conference on Mobile Data Management (MDM)*, May 2006.
- C64 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.
- C65 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.
- C66 G. Trajcevski, P. Scheuermann, H. Bronnimann and A. Voisard. Dynamic Topological Predicates and Notifications in Moving Objects Databases. *IEEE International Conference on Mobile Data Management (MDM)*, May 2005.
- C67 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.
- C68 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.
- C69 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.
- C70 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.
- C71 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.
- C72 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.
- C73 G. Trajcevski, O. Wolfson, H. Cao, H. Lin, F. Zhang and N. Rishe. Managing Uncertain Trajectories of Moving Objects with DOMINO. *International Conference on Enterprise Information Systems (ICEIS)*, April 2002.
- C74 O. Wolfson, H. Cao, H. Lin, G. Trajcevski, F. Zhang and N. Rishe. Management of Dynamic Location Information in DOMINO. *International Conference on Extending Database Technology (EDBT)*, March 2002.
- C75 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.
- C76 G. Trajcevski, O. Wolfson and B. Xu. Research Directions in Moving Objects Databases. *International Conference on Geographic Information Science (GIScience)*, November 2000.

- C77 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)*
- C78 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*
- C79 C. Baral, J. Lobo and G. Trajcevski. Formal Characterization of Active Databases: Part II. *International Conference on Deductive and Object-Oriented Databases (DOOD), December 1997.*
- C80 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

• Real-time Weather Updates in Recommendation Systems

This prototype takes into consideration the weather updates for the purpose of modifying the place of interest (POI) recommendations for users relying on public transportation. Given a particular list of recommended locations along with their ranking and recommended means of transportation, the system will modify the list based on the proximity of the POIs to a given (bus/train) station [C3].

• Shapes Tracking in Sensor Networks

This system has two variants: (1) the one demoed in ACM SenSys 2014 [C10] in which the results of [C13] were implemented; (2) an “orthogonal” variant, which focuses on MaxRS query (i.e., placement of a rectangle with maximal coverage) for a given point-set, where the set is defined by the locations of sensors with readings exceeding certain threshold [C4].

• Compiling Triggers for Heterogeneous Sensor Networks

Extending the concept of meta-triggers [C45], 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 [C20].

• 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 [C60,J9]), 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 [C50]).

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

Continuing the CAT project [C66] and augmenting it with the ideas in [J14], the OMCAT system utilized 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 [C59], and the methodologies that became an MS Thesis work of Hui Ding were published in [J11].

• 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 [C66, C67]

• **Meta-Updater**

Prolog implementation of the research results during my MS Thesis work at UIC, published in [J16]. The implementation interfacing the Meta-Updater module with a Tcl/Tk based GUI was published in [C78].

TEACHING

Northwestern University

- Co-developed EECS 369;
- Developed three 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 339 *Introduction to Database Systems*
- 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*
- EECS 395/495 *Internet of Things* (with Larry Henschen)

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 SERVICE

Graduate Admission

- *In charge of MS Admissions for the EECS department*
 - Overall revenue increase in excess of \$20M between 2009 and 2015
 - Overall increase in MS applications from ~100 to ~1700 between 2009 and 2015. Highly increased overall quality of admitted students (GPA > 3.6/4.0)
 - Provide advisee-adviser matching for MS applicants before admission offer (~5% 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 admissions 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
 - Involved in various events related to industry visits, orientations for undecided students, recruitment (Microsoft Passport initiative)
- Other Services**
- Coached 2 teams to the world finals of ACM ICPC (winners of the Mid-Central ACM ICPC regionals) in 2014 and 2015; To-coach another team to the 2017 ACM ICPC World finals (winners of the ACM ICPC Mid-Central regionals 2016).

GRADUATE STUDENT ADVISING

PhD

Students

- Mas-ud Hussain
- Liu Liu
- Shailav Taneja
- Bing Zhang
- Andi Zang
- Xiaofeng Zhu

- Besim Avci
Dissertation defended March 2016
- Anan Yaagoub
Dissertation defended November 2013
- Oliviu Ghica
Dissertation defended May 2011
- Hui Ding
Dissertation defended May 2008
(co-advised with Peter Scheuermann)
- Sausan Yazji
Dissertation defended Jun 2011

(co-advised with Peter Scheurmann and Robert Dick)

**MS
Students**

- MS Thesis
 - Maxim Kondratyev (UIC, 2002)
 - Gang Li (Northwestern, 2010)
 - Panitan Wongse-ammat (Northwestern, 2015)
 - Xiangtai Hou (Northwestern, 2016)

 - MS Project
 - Nimesh Nedungadi (UIC, 2003)
 - Bharath Suranjan (UIC, 2007)
 - Stephen Wiley (Northwestern, 2011)
 - Jesse Yanutola (Northwestern, 2012)
 - Rishitha Chennupati (Northwestern, 2013)
 - Hao Chen (Northwestern, 2013)
 - Boda Du (Northwestern, 2014)
 - Xiangyi Xie (Northwestern, 2014)
 - Donghan Miao (Northwestern, 2014)
 - Xiling Sun (Northwestern, 2013)
 - Xu Tian (Northwestern, 2014)
 - Li Wang (Northwestern, 2014)

 - Presently supervising 12 MS students projects in EECS 499 (individual study) and EECS 590 (Research)
-

Additional PhD Defense Committee member:

- UIC:
 - Mohamed Ali (December 2014)
 - Rigel Gjomemo (December 2011)
- EPFL:
 - Saket Sahte (March 2013)
- Northwestern:
 - Matthew Woods (August 2016)
 - Leonidas Spinoulas (June 2016)
 - Reza Borhani (April 2016)
 - Shengxin Zha (March 2016)
- Univ. degli Studi di Milano:
 - Hamza Adnan Issa (scheduled Feb. 2017)

Participated in numerous examination committees for MS Thesis defenses, MS Project defenses, PhD Qualifier exams, PhD Prospectus exams.

PROFESSIONAL SERVICE

Editorial

Associate Editor: *GeoInformatica – International Journal on Advances of Computer Science for Geographic Information Systems* (March 2013 –)
Associate Editor: *ACM Transactions on Spatial Algorithms and Systems (TSAS)* (September 2013 –)

Guest Editor: *ACM SIGSPATIAL Newsletter – Special Issue on GeoSpatial Uncertainty* (August 2016)

Program Committee Co-Chair	ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems 2016 (<i>ACM SIGSPATIAL 2016</i>)
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), September 2014
Local Organizing Chair	ACM SIGMOD (2006); ACM SIGSPATIAL GIS (2011 and 2012)
Advanced Seminars Chair	IEEE MDM 2012, IEEE MDM 2015
Workshops Co-Chair	IEEE MDM 2014, ACM SIGSPATIAL 2015
PhD Colloquium Chair	IEEE MDM 2011

Technical Program Committee Member

- 2016: DASFAA Conference, SENSORNETS Conference, MDM Conference, ADBIS Conference, MEDI Conference, CIKM conference.
- 2015: DASFAA Conference, CIKM Conference, HuMoComp Workshop, SENSORNETS Conference, MEDI Conference, SSTD Conference, ACM SIGSPATIAL GIS Conference (Senior PC Member), MobiSocial Workshop.
- 2014: SENSORNETS Conference, MobiSocial Workshop, IEEE MDM Conference, ACM SIGSPATIAL GIS Conference, CIKM Conference, GeoRich Workshop, IDEAS Conference.
- 2013: SSTD Conference (demo program), IDEAS Conference, S-CUBE Conference, IMMoa workshop, ACM SIGSPATIAL GIS Conference, Computational Transportation workshop, SENSORNETS Conference, MobiSocial Workshop, MobiDE Workshop, IDEAS Symposium, HuMoComp Workshop, ADBIS Conference.
- 2012: ACM SIGSPATIAL GIS Conference; ADBIS Conference, IEEE MDM Conference, ODBASE Conference, ACM MobiDE workshop, ICNSC Conference, SRDS Symposium, IWCTS workshop, CDRM Workshop.
- 2011: ACM SIGSPATIAL 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 SIGSPATIAL 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 SIGSPATIAL GIS Conference.
- 2008: ACM SIGSPATIAL GIS Conference, ACM MobiDE Workshop, IEEE-AINA Conference, IEEE-MDM M-PDMST Workshop.
- 2007: IEEE MDM Conference, OTM Federated Conference (CAMS), ACM SIGSPATIAL GIS Conference, IEEE MDM M-PDMST Workshop, IEEE SAHNS Workshop, ACM MobiDE Workshop.

- 2006: ACM SIGSPATIAL GISConference, EDA-PS Conference, ACM DEBS Conference, SSTD Symposium.
- 2005: IEEE MDM M-PDMST Workshop, OTM Federated Conference (CAMS).

Journals Review

ACM Transactions on Spatial Algorithms and Systems (2014, 2015 x2)
 ACM Transactions on Database Systems (2016, 2013/2014, 2006/2007, 2005/2006)
 IEEE Transactions on Data and Knowledge Engineering (2013 x 2, 2012 x2, 2011, 2010, 2008/2009, 2007/2008, 2005/2006)
 IEEE Communications Magazine (Special issue, 2016)
 Int.1 Journal on Distributed and Parallel Databases (DPD) (2013, 2010)
 Information Systems (Elsevier) (2013, 2008/2009)
 GeoInformatica Journal (2013, 2012, 2011)
 Very Large Databases Journal (2016, 2012, 2011, 2010/2011)
 Computer Science and Information Systems (2012)
 Journal on Wireless Networks (WINET) (2012, 2010, 2006, 2005)
 IEEE Transactions on Image Processing (2012, 2011)
 ACM/IEEE Transactions on Mobile Computing (2010)
 International Journal on Spatial Information Systems (2010)
 ACM Transactions on Pattern Analysis and Machine Intelligence (2010)
 ACM Transactions on Computational Logic (2008)
 ACM Transactions on Information Systems (2008)
 The Computer Journal (2005)

KEYNOTES:

Fusing Uncertain Location Data from Heterogeneous Sources. 4th International Workshop on Mobile Geographic Information Systems (MobiGIS), November 2015.

Uncertainty of Spatio-Temporal Data: Beyond Querying. 2nd ACM SIGSPATIAL International Workshop on Querying and Mining Uncertain Spatio-Temporal Data (QUeST) 2011

TUTORIALS, PANELS and INVITED TALKS

- **Tutorial:** *Compression of Spatio-Temporal Data*, MDM Conference, June 2016.
- **Tutorial:** *Managing Uncertainty in Spatial and Spatio-Temporal Data* (with A. Zufle, T. Emrich, M. Renz, R. Cheng and N. Mamoulis), ICDE Conference, April 2014.
- **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:

- *Mobile Big Data Analytics*, IEEE MDM, July 2014;
- *Collaborative Technologies and Big Data*, CTS Symposium, May 2012;
- *Context Prediction and Adaptation in Pervasive Computing*, MDM Conference, May 2010.
- **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

- Invited Talks:

- *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 (MDM Conference), May 2010).

- *Collaborative Coupling of Sensing and Actuation: Uncertainty Beyond Querying* (Invited Talk – CTS, May 2012).

- *Links Between “D” and “A” in Mobile Data Analytics* (Invited Talk – University of New South Wales, April 2013).

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM) – Senior Member

Institute of Electrical and Electronics Engineers (IEEE)

US CITIZEN

REFERENCES:

Available Upon Request