

# Svilen R. Mihaylov

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## RESEARCH INTERESTS

Optimization of recursive queries and distributed algorithms; sensor networks and distributed systems and with constrained resources; distributed protocols; heterogeneous database systems. Tentative thesis topic: *Distributed Query Processing and Data Integration*.

## RESEARCH EXPERIENCE

*Research Assistant* 2005 – present  
**University of Pennsylvania**, Philadelphia, PA  
Computer and Information Science Department

Recent research:

- Distributed optimization of recursive queries with expensive predicates.
- Developed distributed shared-nothing parallel query optimization and execution system which supports recursive queries with embedded Java predicates.
- Novel incremental (delta-oriented) implementations of PageRank, K-means clustering and other well known distributed algorithms with significant resulting speedups.

Involved in the ASPEN research project at the Database group:

- Routing and distributed joins and data integration in sensory networks
- Developed efficient network communication and power management algorithms and distributed query optimizer for joins in sensor networks.
- Implemented above algorithms on Imote2 and Mica-Z wireless devices and integrated with a federated query optimizer.

*Research Assistant* 2003 – 2005  
**Polytechnic University** (presently NYU Poly), New York, NY

- Developed algorithms for remote file synchronization.
- Implemented network communication-efficient file synchronization server.

## WORK EXPERIENCE

*Software Engineering Intern* Summer 2010  
**Google, Inc**, New York, NY

- Explored ways to reduce the user-side latency of Google Public DNS.
- Improved the internal monitoring system of the service.

*Research Intern* Summer 2005  
**NEC Laboratories**, Princeton, NJ

- Involved in design of a scalable high-throughput publish-subscribe system.
- Performed cache-profiling and testing of the system against expected workloads.

*Webmaster* 2005  
**Polytechnic University**, New York, NY

- Maintained the Department of Computer Science and Engineering's website.

**SELECTED PUBLICATIONS**

**Dynamic Join Optimization in Multi-Hop Sensor Networks**  
with Marie Jacob, Zachary Ives and Sudipto Guha, VLDB, 2010

**SmartCIS: Integrating Digital and Physical Environments**  
with Mengmeng Liu, Zhuowei Bao, Marie Jacob, Rahul Iyer, Easwaran Subbaraman, Zachary Ives, Boon Thau Loo and Sudipto Guha, SIGMOD demo, 2009

**A Substrate for In-network Data Integration**  
with Marie Jacob, Zachary Ives and Sudipto Guha, VLDB Workshop on Data Management for Sensor Networks, 2008

**Efficient Query Subscription Processing for Prospective Search Engines**  
with Utku Irmak, Torsten Suel, Samrat Ganguly and Rauf Izmailov, USENIX, 2006

**Improved Single-Round Protocols for Remote File Synchronization**  
with Torsten Suel and Utku Irmak, IEEE Infocom, 2005

**New Protocols for Remote File Synchronization Based on Erasure Codes**  
with Torsten Suel and Utku Irmak, NYMAN, 2004

**EDUCATION**

*Ph.D. candidate*, Computer Science 2005 – present  
**University of Pennsylvania**, Philadelphia, PA  
Database Group, Computer and Information Science Department  
Advisors: Zachary Ives, Sudipto Guha.  
Major GPA: 3.9/4.0; Overall GPA: 3.9/4.0  
Anticipated graduation: July 2012.

*Bachelor of Science*, Computer Science 2001 – 2005  
**Polytechnic University** (presently NYU Poly), New York, NY  
Department of Computer Science.  
Major GPA: 3.9/4.0; Overall GPA: 3.9/4.0 (summa cum laude)

**AWARDS**

SIGMOD 2009 demonstration competition – honorable mention for the demonstration **SmartCIS: Integrating Digital and Physical Environments**.  
University of Pennsylvania – research fellowship.  
Polytechnic University – outstanding academic achievement in computer science.  
Polytechnic University – dean’s list for all semesters.  
Polytechnic University – international scholarship award.

**COURSEWORK**

- Implementation of Database Management Systems
- Networked Systems and Protocols
- Web Protocols and Web Search Engines
- Data Integration Algorithms
- Approximation Algorithms
- Scientific Computing

**TEACHING EXPERIENCE**

*TA: University of Pennsylvania*, Database Systems 2006  
*TA: University of Pennsylvania*, Internet and Web Systems 2007

**SKILLS**

C, C++, Java, Python, NesC, MATLAB, PHP.  
Extensive experience with TinyOS, Oracle DB, MySQL, Fedora Linux.