

# Mohamed H. Ali

<http://MohamedAliOnline.com/>

Senior Software Engineer  
Microsoft Corporation

One Microsoft Way  
BVN-1\11051  
Redmond, WA 98052-6399  
Phone: (425) 707-1150  
mali@microsoft.com

Affiliate Assistant Professor

Institute of Technology,  
University of Washington-Tacoma  
&  
Computing and Software Systems,  
University of Washington-Bothell

<http://faculty.washington.edu/mhali/>  
mhali@u.washington.edu

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## Research Interests

**Big Data Systems, Data Streaming Systems, Database Management Systems, and Spatiotemporal Databases.** More specifically:

- “*Real-time*” monitoring, analysis and mining of data streams
- GeoStreaming; processing and analysis of data streams with geographic and spatial information
- Visualization of spatial, temporal and spatiotemporal information
- Real time behavioral targeting, business intelligence, audience intelligence and computational finance
- Phenomenon detection and tracking in continuously evolving data streams, and analysis of their environmental and social impact

## Education

- **Ph.D., Computer Science, Purdue University, West Lafayette, IN, 2007**
  - Thesis: *Phenomenon-aware Data Stream Management Systems*
  - Advisor: Walid G. Aref
- **M.S., Computer Science, School of Engineering, Alexandria University, Egypt, 2001**
  - Thesis: *A new efficient structure for parallel multidimensional indexing*
  - Advisors: M. A. Ismail and Amani Saad
- **B.S., Computer Science, School of Engineering, Alexandria University, Egypt, 1999**
  - First Degree of honor
  - Obtained the “*Naim-Abou-Taleb Class 99 award*”: awarded to the student with the highest cumulative GPA upon graduation in the Dept. of Computer Science, Alexandria University, Egypt, 1999

## Publications

DBLP: [http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/a/Ali:Mohamed\\_H.html](http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/a/Ali:Mohamed_H.html)

### Conference Publications:

- Siva Ravada, Mohamed Ali, Jie Bao, Mohamed Sarwat, [The ACM SIGSPATIAL GIS Cup 2013 – Geofencing](#), In Proceedings of the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS), Orlando, FL, USA, November 2013.
- Mohamed Ali, Travis Rautman, John Krumm, Ankur Teredesai, [The ACM SIGSPATIAL GIS Cup 2012 – Map Matching](#), In Proceedings of the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS), Redondo Beach, CA, USA, November 2012.
- Mohamed Ali, Badrish Chandramouli, Jonathan Goldstein, Roman Schindlauer, [The Extensibility Framework in Microsoft StreamInsight](#), In Proceedings of the International Conference on Data Engineering (ICDE), 1242-1253, Hannover, Germany, April 2011.
- Yasin Silva, Walid Aref, Mohamed H. Ali, [The Similarity Join DataBase Operator](#), In Proceedings of the International Conference on Data Engineering (ICDE), 892-903, Long Beach, California, USA, March 2010.
- Ashish Bindra, Ankur Teredesai, Mohamed H. Ali, Walid G. Aref, [Multi-Dimensional Phenomenon-aware Stream Query Processing](#), In Proceedings of the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS), 476-479, Seattle, Washington, USA, November 2009 (*Best Poster Award Runners Up*).
- Yasin Silva, Walid Aref, Mohamed H. Ali, [Similarity Group-by](#), In Proceedings of the International Conference on Data Engineering (ICDE), 904-915, Shanghai, China, March 2009.
- Mohamed H. Ali, M. F. Mokbel, and W. G. Aref, [Phenomenon-aware stream query processing](#), In Proceedings of the International Conference on Mobile Data Management (MDM), 8-15, Mannheim, Germany, May 2007.
- Roger S. Barga, Jonathan Goldstein, Mohamed H. Ali, and Mingsheng Hong, [Consistent Streaming Through Time: A Vision for Event Stream Processing](#), In Proceedings of the International Conference on Innovative Data Systems Research (CIDR), 363-374, Asilomar, CA, January 2007.
- Mohamed H. Ali, W. G. Aref, and I. Kamel, [Scalability management in PhenomenaBases](#), In Proceedings of the International Conference on Scientific and Statistical Database Management (SSDBM), 91-100, Vienna, Austria, July 2006.
- M. H. Ali, M. F. Mokbel, W. G. Aref, and I. Kamel, [Detection and tracking of discrete phenomena in sensor-network databases](#), In Proceedings of the International Conference on Scientific and Statistical Database Management (SSDBM), 163-172, Santa Barbara, CA, June 2005.

## Journal Publications:

- Yasin N. Silva, Walid G. Aref, Per-Ake Larson, Spencer S. Pearson, Mohamed H. Ali, [Similarity Queries: Their Conceptual Evaluation, Transformations, and Processing](#), Very Large Data Bases (VLDB) Journal, 22(3): 395-420, 2013.
- Mohamed H. Ali, Ashish Bindra, Ankur Teredesai. [Dimensionality Reduction in Phenomenon-Aware Stream Query Processing](#). International Journal of Data Engineering, 3(3), 2012.
- Mohamed H. Ali, Badrish Chandramouli, Balan Raman, Ed Katibah: [Spatio-Temporal Stream Processing in Microsoft StreamInsight](#). IEEE Data Eng. Bull., 33(2): 69-74, 2010.
- Badrish Chandramouli, Mohamed Ali, Jonathan Goldstein, Beysim Sezgin, and Balan S. Raman, [Data Stream Management Systems for Computational Finance](#), IEEE Computer 43(12): 45-52, 2010.
- Mohamed H. Ali, A. A. Saad, and M. A. Ismail. [The PN-tree: A parallel and distributed multidimensional index](#). Distributed and Parallel Databases, 17(2):111–133, 2005.

## Conference Demos:

- Mohammed Daubal, Olajumoke Fajinmi, Lars Jangaard, Niko Simonson, Brett Yasutake, Joe Newell, Mohamed Ali, [Safe Step: A Real-time GPS Tracking and Analysis System for Criminal Activities using Ankle Bracelets](#), In Proceedings of the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS), Orlando, FL, USA, November 2013.
- Mohamed Ali, Badrish Chandramouli, Jonathan Fay, Curtis Wong, Steven Drucker, Balan Sethu Raman, [Online Visualization of Geospatial Stream Data using the WorldWide Telescope](#), In Proceedings of the International Conference on Very Large Data Bases (VLDB), Seattle, Sept. 2011.
- Jeremiah Miller, Miles Raymond, Josh Archer, Seid Adem, Leo Hansel, Sushma Konda, Malik Luti, Yao Zhao, Ankur Teredesai and Mohamed Ali, [An Extensibility Approach for Spatio-temporal Stream Processing using Microsoft StreamInsight](#), In Proceedings of the 12th International Symposium on Spatial and Temporal Databases (SSTD), Minneapolis, MN, USA, August 2011.
- Mohamed Ali, Badrish Chandramouli, Balan S. Raman, Ed Katibah, [Real-Time Spatio-Temporal Analytics using Microsoft StreamInsight](#), In Proceedings of the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS), 542-543, San Jose, CA, USA, November 2010.

### **Conference Demos (cont'd):**

- Seyed Jalal Kazemitabar, Ugur Demiryurek, Mohamed Ali, Afsin Akdogan, Cyrus Shahabi, [Geospatial Stream Query Processing using Microsoft SQL Server StreamInsight](#), In Proceedings of the International Conference on Very Large Data Bases (VLDB), 1537-1540, Singapore, Sept. 2010.
- Mohamed Ali, C. Gereca, B. Raman, B. Sezgin, T. Tarnavski, T. Verona, P. Wang, P. Zabback, A. Kirilov, A. Ananthanarayan, M. Lu, A. Raizman, R. Krishnan, R. Schindlauer, T. Grabs, S. Bjeletich, B. Chandramouli, J. Goldstein, S. Bhat, Y. Li, V. Di Nicola, X. Wang, David Maier, I. Santos, O. Nano, S. Grell. [Microsoft CEP Server and Online Behavioral Targeting](#). In Proceedings of the International Conference on Very Large Data Bases (VLDB), 1558-1561, Lyon, France, 2009.
- Mohamed Ali, W. G. Aref, R. Bose, A. K. Elmagarmid, A. Helal, I. Kamel, and M. Mokbel. [Nile-pdt: A phenomenon detection and tracking framework for data stream management systems](#). In Proceedings of the International Conference on Very Large Data Bases (VLDB), Trondheim, Norway, 1295 - 1298, Sept. 2005.
- M. A. Hammad, M. F. Mokbel, Mohamed Ali, W. G. Aref, A. C. Catlin, A. K. Elmagarmid, M. Eltabakh, M. G. Elfeky, T. Ghanem, R. Gwadera, I. F. Ilyas, M. Marzouk, and X. Xiong. [Nile: A query processing engine for data streams](#). In Proceedings of the International Conference on Data Engineering (ICDE), 851, Boston, MA, April 2004.

### **Workshop Publications:**

- Alex Raizman, Asvin Ananthanarayan, Anton, Kirilov, Badrish Chandramouli and Mohamed Ali, [An Extensible Test Framework for the SQL Server StreamInsight Query Processor](#), Third International Workshop on Testing Database Systems (DBTest), Co-located with ACM SIGMOD, Indianapolis, IN, June 2010 (*Best Paper Award*).
- Mohamed H. Ali, [Phenomenon-aware Sensor Database Systems](#). Lecture Notes of Computer Science (LNCS), Current Trends in Database Technology, EDBT 2006 Ph.D. Workshop, 4254: 1-11, October 2006.
- M. Eltabakh, W. G. Aref, M. Ouzzani, Mohamed H. Ali. [Discovering Consensus Patterns in Biological Databases](#). In Proceedings of the VLDB workshop on Data Mining in Bioinformatics (VDMB), 170-184, Seoul, Korea, Sept. 2006.
- Mohamed H. Ali, W. G. Aref, and C. Nita-Rotaru. [Spass: Scalable and energy-efficient data acquisition in sensor databases](#). In Proceedings of the International ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE), in conjunction with SIGMOD/PODS, 81-88, Baltimore, MD, June 2005.

# Publications

## Patents:

- Colin Meek, Mohamed Ali, Galex Yen, Ciprian Gerea, Balan Sethu Raman, Jonathan Goldstein, Badrish Chandramouli, Tomer Verona, Torsten Grabs, Stream Operator, US Patent-under filing, filed May 16, 2011 - MICROSOFT CORPORATION.
- Mohamed Ali, Tomer Verona, Balan Sethu Raman, Beysim Sezgin, Jonathan Goldstein, Badrish Chandramouli, Ping Wang, Roman Schindlauer, Asvin Ananthanarayan, Extensibility Model for Stream-based Operators and Aggregates, US Patent Application No. 12/777,259, Publication No. US-2011-0283295-A1, published Nov. 17, 2011 - MICROSOFT CORPORATION.
- Badrish Chandramouli, Jonathan Goldstein, David Maier, Mohamed Ali, Roman Schindlauer, Flexible High-Performance Dynamic Pattern Matching over Potentially Disordered Streams, US Patent Application No. 12/780,939, Publication No. US-2011-0282812-A1, published Nov 17, 2011 - MICROSOFT CORPORATION.
- Roger S. Barga, Jonathan Goldstein, Mohamed H. Ali, and Mingsheng Hong. Consistency Sensitive Streaming Operators. US Patent Application No. 11/937,118, Publication No. US-2009-0125635-A1, published May 14, 2009 - MICROSOFT CORPORATION.
- Roger S. Barga, Jonathan Goldstein, Mohamed H. Ali, and Mingsheng Hong. Temporal Event Stream Model. US Patent Application No. 11/937,011, Publication No. US-2009-0125550-A1, published May 14, 2009 - MICROSOFT CORPORATION.

## Technical Reports:

- B. Chandramouli, Mohamed Ali, Jonathan Goldstein, Beysim Sezgin, and Balan Sethu Raman, Data Stream Management Systems for Computational Finance, Technical Report, MSR-TR-2010-130, Microsoft Research, Sept. 2010.
- Jonathan Goldstein, Mingsheng Hong, Mohamed Ali, and Roger Barga. Consistency Sensitive Streaming Operators in CEDR. Technical Report, MSR-TR-2007-158, Microsoft Research, Dec 2007.
- Mohamed Ali, M. Y. ElTabakh, Elisa Bertino, Hippocratic Data Streams - Concepts, Architectures and Issues, Technical Report CSD-05-025, Department of Computer Science, Purdue University, November 2005.
- Mohamed Ali, W. G. Aref, and Ibrahim Kamel. Multi-way Joins for Sensor-Network Databases. Technical Report CSD-05-21, Department of Computer Science, Purdue University, October 2005.
- Mohamed Ali, W. G. Aref, and M. Eltabakh. Scalability via summaries: Stream query processing using promising tuples. Technical Report CSD-05-005, Department of Computer Science, Purdue University, March 2005.
- Mohamed Ali, M. Y. ElTabakh, and Cristina Nita-Rotaru, FT-RC4 A Robust Security Mechanism for Data Streams Systems. Technical Report CSD-04-19, Department of Computer Science, Purdue University, May 2004.

# Professional Experience

## Professional Experience

### Microsoft Corporation – “The Consistent Streaming Through Time Vision”

- **Microsoft SQL Server, StreamInsight team, [Senior Software Engineer](#) (May 2007- Present), Redmond, WA**
- **Microsoft Research, The Database group, [Intern researcher](#) (May 2006 - August 2006)**
  - *Before 2006*, I shared a vision with colleagues at Microsoft Research; the “Consistent Streaming Through Time” vision that embraces a temporal stream model to handle imperfections in real-time information delivery and to define correctness guarantees on the query output
  - *In summer 2006*, I was a member of a team of four at Microsoft Research to ramp up the CEDR (Complex Event Detection and Response) project, an event streaming system that adopts our vision
  - *In 2007*, I joined Microsoft as a full time software design engineer to incubate the CEDR research project into Microsoft SQL Server and became a founding member of the newly established team.
  - *In Sept. 2009*, the first public beta was released to the web and brand-named as *Microsoft StreamInsight™*. The Microsoft StreamInsight has been demonstrated to the database community for first time in the International Conference on Very Large Data Bases (VLDB 09)

### Microsoft Corporation – “Real-time Information Management Everywhere”

Since the first public release of StreamInsight, I have been investigating the use of StreamInsight in managing real time information across a diversity of verticals. These verticals include but are not limited to:

- Microsoft Bing Mobile and “Big Data” analytics
  - In collaboration with Bing Mobile - Signals and Context team, we have been collecting various cell phone signals from Bing Mobile users to analyze and to build users’ context with the help of our real-time big-data analytics framework.

# Professional Experience

- Microsoft Bing IPE (Information, Platform and Experience)
  - I have been building a distributed scalable spatiotemporal system that handles millions of concurrent queries. The system is cloud based and accepts millions of connected devices. While context-awareness of a user's profile and location is a key ingredient in the system's query processor, cybersecurity is the other necessary ingredient to protect the users' security and privacy.
- Online advertising, behavioral targeting and audience intelligence
  - In collaboration with the Microsoft Ad Center Behavioral targeting team, we deployed Microsoft StreamInsight to monitor, mine, and analyze the users' online behavior using streams of millions of daily web clicks on *msn.com*
- Microsoft Bing Maps
  - In collaboration with Microsoft Research and Bing Maps, we have studied the use of GPS data streams to auto-correct maps, to build traffic models, to annotate maps with turn restrictions and traffic lights, and to increase road safety
- Intelligent Transportation Systems (ITS) and traffic management in LA county, CA
  - In collaboration with University of Southern California (USC) - Integrated Media Systems Center (IMSC) and Metropolitan Transportation Authority (MTA), I am leading a project from Microsoft side to deploy Microsoft technologies to monitor, manage and analyze traffic patterns in Los Angeles County
- Visualization of spatial, temporal and spatiotemporal information
  - In collaboration with Microsoft Research (MSR), I have Integrated Microsoft StreamInsight with Microsoft WorldWide Telescope ([www.worldwidetelescope.org](http://www.worldwidetelescope.org)) to visualize geospatial data streams at real time
- Fusion Framework and Fusion Core Solution
  - With [Microsoft Fusion Framework and Fusion Core Solution](#), agencies gather, assess, and share critical intelligence to protect our homeland and to counter potential threats and criminal activity. I have been investigating the real-time analysis and response side of the fusion framework
- Social networking
  - In collaboration with the University of Washington, Institute of Technology, Tacoma, we conducted research in real time sentiment analysis over Twitter and Facebook feeds
  - We built a framework to detect the existence of friends in the vicinity by streaming GPS locations from smart phones to a geospatial query processor built on top of Microsoft StreamInsight

## Professional Experience

### Microsoft Corporation – “Query Optimization”

- **Microsoft SQL Server, Query Optimizer team, [Software Design Engineer](#) (May 2007- June 2008), Redmond, WA**
  - In the context of the TPC-H-10TB scale and up, I designed several query plan transformation rules that achieve better performance in large-scale data warehouses
  - Using correlation detection techniques, I developed new optimization algorithms that automatically create and maintain materialized views over large-scale highly-correlated data
  - Designed and implemented several modules in four layers of the query optimizer: the statistics manager layer, the cost-based optimization layer, the heuristic optimization layer, and the plan generation/transformation layer

### Purdue University – “Phenomenon-aware Data Stream Systems”

- **Purdue University, Department of Computer Science, West Lafayette, IN (August 2002 - May 2007).**

#### [Research Assistant, Indiana Center for Database Systems \(ICDS\)](#)

Member of the NILE project, a data stream management system project developed at Purdue University. I designed and integrated the following features in the system:

- *Nile-PDT*, a data-mining framework for continuous *Phenomenon Detection and Tracking* (PDT) inside the *Nile* data stream management system
- *Phenomenon-aware query optimizer*, a query optimizer that guides the construction/execution of query plans dynamically based on phenomena detected by the *Nile-PDT* data-mining framework
- *Similarity based database operators*, similarity based versions of the relational join and group-by operators that extend their semantics to address non-exact, approximate or non-precise data

### Other Research and Industrial Experience

- Purdue University, Department of Computer Science, West Lafayette, IN (June 2004-August 2004).
  - The Purdue *Knowledge Projection Project* (KPP). KPP is a data mining project that aims to revolutionize maintenance operations for Navy vessels. The team is a collaborative effort involving groups from academia, government, and industry. (The team wins MIRA Award 2005, Read more at [http://www.cs.purdue.edu/news/05-13-2005\\_mira.shtml](http://www.cs.purdue.edu/news/05-13-2005_mira.shtml))



## Professional Experience

- Alexandria University - School of Engineering - Dept. of Computer Science and Automatic Control-Alexandria, Egypt. (September 1999-August 2002)  
Graduate Research Assistant,
  - Designed a multidimensional index structure for distributed and parallel database systems (the PN-Tree)
  - Applied my research in multidimensional indexing to enhance several computer vision techniques
- Alexandria University ---Alexandria, Egypt (August 1999-August 2002)
  - Participated in the design and implementation of the information system of the School of Engineering, Alexandria University that handles student registration
  - Participated in the installation and testing process of the renovated Alexandria University network, a multi-site regional network
- Scientific Computation Center---Alexandria, Egypt (October 1999- August 2002)  
System Analyst,
  - Participated in teaching and training the IT department of the corporate office of the word wide known “Bibliotheca Alexandrina”, Alexandria, Egypt.
  - Participated in performing the requirement analysis and implementation of the database system for the Spinning Testing Lab in CATGO (General Organization for Cotton Arbitration and Testing).
  - Participated in solving the Y2K problem for CATGO (General Organization for Cotton Arbitration and Testing).
- Planet Information Systems Company (*ORACLE Partner*)---Alexandria, Egypt (August 1999-September 1999)  
Application Developer and System Analyst,
  - Designed and implemented an Inventory System as a part of an ERP system (Enterprise Resource Planner) using Oracle
- Marinesoft Entwicklungs und Logistikgesellschaft (Rostock-Germany) (July 1998-August 1998)  
Intern application developer,
  - Developed several modules in an interactive computer-based marine simulator used by marine professional for training purposes

# Teaching Experience

## Teaching Experience

- Microsoft SQL Server, Microsoft Corporation, Redmond, WA (May 2007 – Present). [Member of the SQL Server Academic Engagement Team \(SQLAE\)](#)
  - The purpose of the team is to get engaged in research with a selected set of universities, to work closely with professors and graduate students, and to provide professional guiding directions from an industrial perspective. The SQLAE team activities also include offering technical seminars, promoting the company culture in academia, organizing Microsoft TechFest events on university campuses, and shooting for hiring opportunities.
- University of Washington, [Instructor](#), teaching the [Geographic Information Systems Seminar Course](#), offered in the following institutes/quarters:
  - (Computing and Software Systems, Bothell, [UWB/CSS 590](#) Spring 2013)
  - (Institute of Technology, Tacoma, [UWT/TCSS 590B](#) Autumn 2012)
  - (Institute of Technology, Tacoma, [UWT/TCSS 590D](#) Winter 2011)
  - Topics; Geographic Information Retrieval, Distributed and Parallel algorithms for GIS, Location-based Services, Similarity Searching, Spatial Analysis and Integration, Spatial and Spatio-temporal Data Acquisition, Spatial Data Mining and Knowledge Discovery, Spatial Data Quality and Uncertainty, GPU and Novel Hardware Solutions for GIS, Spatial Data Structures and Algorithms
- University of Washington, Institute of Technology, Tacoma, WA, [Instructor](#), teaching the [Advanced Database Systems Seminar Course](#), offered in the following quarters:
  - ([UWT/TCSS 590C](#) Autumn 2011)
  - Topics; Data Models, Database Evolution, Query Processing, Data Storage, Transaction Management, Extensibility, Data Warehousing, Data Mining, Web services, Stream-based systems, Cloud based databases, Commercial Database Systems
- University of Washington, Institute of Technology, Tacoma, WA, [Instructor](#), teaching the [Data Streams Research Seminar Course](#), offered in the following quarters:
  - ([UWT/TCSS 498/600](#) Spring 2010)
  - ([UWT/TCSS 490/590](#) Autumn 2010)
    - Undergraduate/graduate level class that addresses research directions and industrial trends in data streams
    - Instructors: Ankur M. Teredesai and Mohamed Ali
- Prepared and taught a two-hour condensed course titled, An Introduction to Microsoft StreamInsight, 1st International Conference on Computing for Geospatial Research and Application (Com.Geo June, 2010)

## Teaching Experience

- University of Washington, Institute of Technology, Tacoma, WA. (Spring 2009) [Guest speaker, UWT/TCSS 490/590 Database Systems Implementation](#),
  - Undergraduate/graduate level in-class presentation titled: "An Introduction to Stream Query Processing Using Microsoft StreamInsight"
- University of Washington, Institute of Technology, Tacoma, WA. (Spring 2009) [Co-advisor for the TCSS 498: Directed Readings course](#)
  - Co-advised one student in a directed reading class. I promoted the student's interest in the field of spatiotemporal data stream query processing. The outcome of the class was a successful publication: "[Multi-dimensional Phenomenon-aware Stream Query Processing](#)" accepted at the ACM SIG-SPATIAL GIS Conference 2009 and its extended journal version accepted at the International Journal of Data Engineering (IJDE) 2012
- Graduate Teacher Certificate (GTC), Purdue University, Center of Instructional Excellence (CIE), West Lafayette, IN (Spring 2007). The Graduate Teacher Certificate (GTC) program documents the involvement in actual classroom teaching, and teacher development activities, (i.e., pre-semester teaching orientations and workshops, micro-teaching with consultative feedback, classroom visitations and videotaping, together with peer feedback, and self-analyses)
- Graduate Teacher Technology Certificate (GT<sup>2</sup>C), Purdue University, Center of Instructional Excellence (CIE), West Lafayette, IN (Spring 2006). The Graduate Teacher Technology Certificate (GT<sup>2</sup>C) program provides certification that a graduate student has acquired the technology skills needed to teach today's courses: Multimedia e-learning, web authoring, Computer Mediated Communication, online instructional design.
- Attended the "College Teaching Workshops, Series I" offered by the Center of Instructional Excellence (CIE), Purdue University (Spring 2006): The workshop series focuses on the following concepts in teaching: Student-teacher relationships, university policies, designing instructions, lecturing techniques, using discussions, the basics of testing, subjective tests and assigning grades, getting student feedback, Microteaching.
- Attended the "College Teaching Workshops, Series II" offered by the Center of Instructional Excellence (CIE), Purdue University (Spring 2006) Guest lecturers that present topics from their areas of specialization regarding teaching approaches and techniques from various perspectives.

## Teaching Experience

- Purdue University, Department of Computer Science, West Lafayette, IN.  
[Teaching Assistant](#) (Fall 2006 – Spring 2007)  
Taught and graded the following courses:
  - C348: Information Systems
  - CS352: Compilers: Principles and Practice
- Purdue University, Department of Computer Science, West Lafayette, IN.  
[Online lesson preparation and distance learning](#) (Spring 2006)  
Prepared online lessons for the following courses:
  - CS448: Introduction to relational database systems
- Alexandria University, Scientific Computation Center---Alexandria, Egypt.  
[Instructor](#) (September 1999 - August 2002)  
Taught the following courses to a large diversity of public audience with variable education levels:
  - k-12 educational programs and computer literacy programs for senior citizens
    - Introductory computer classes
    - Word processing
    - Spread sheets
  - Alexandria University certification programs to industry professionals
    - Structured Programming in C/C++
    - ORACLE database management system
    - Microsoft SQL Server
- Alexandria University, School of Education---Alexandria, Egypt. Completed a “Preparing Instructors of Higher Education” course, a two week intensive course that presents teaching tactics along with micro-teaching sessions. The course is intended to prepare instructors to teach grad level courses.
- Alexandria University - School of Engineering - Dept. of Computer Science and Automatic Control---Alexandria, Egypt. [Teaching Assistant](#) (September 1999-August 2002)  
Taught and graded the following courses:
  - Systems Programming, Operating Systems, Man Machine Interaction, Data Structures, Introduction to Computers  
Supervised the following labs:
  - Databases Lab., Microprocessor Lab., Structured Programming Lab. (in C/C++ language), Object Oriented Design Lab., Operating Systems Lab. (Unix)
- Alexandria University - School of Engineering - Dept. of Civil Engineering and Automatic Control---Alexandria, Egypt. [Teaching Assistant](#) (September 2000-August 2002) - Taught and graded the following courses:
  - Computer Programming in FORTRAN

### Services and Activities

#### Memberships

I am a professional member of:

- [ACM](#), [ACM SIGMOD](#), [ACM SIGSPATIAL](#), [ACM SIGCSE](#)
- [Egyptian American Scientists and Engineers](#) (EASE), a non-profit organization that provides a platform for networking, career development, community service and professional collaboration between Egypt and USA

#### Keynotes

- The NSF CyberGIS Project All-Hands Meeting. [Using GIS to get information into the hands of decision makers](#), Mohamed Ali and Dan Fay, Seattle, WA, Sept. 2013.
- The Second International ACM SIGSPATIAL Workshop on Geostreaming (IWGS 2011). [In an Era of GPS Traces](#). Chicago, IL, 2011.
- The first International Conference on Computing for Geospatial Research and Application (Com.Geo). [Spatial Data Streaming Or Streaming Spatial Data: Just Stream It the Way You Like](#), Balan Sethu Raman and Mohamed Ali, Washington D.C., June 2010.

#### Invited Talks

- Open Data for Open Science, Microsoft Research. [Microsoft StreamInsight and Environmental Research](#).
  - Redmond, WA, USA, April 2012
  - Beijing, China, July 2012
  - Sydney- Melbourne, Australia, Sept 2012
- Institute of Technology, University of Washington, Tacoma. Grad Student Orientation Day. [Towards Fruitful Collaboration between Academia and Industry](#). Tacoma, WA, 2012.
- University of Southern California (USC), Integrated Media Systems Center (IMSC), [Spatiotemporal Stream Processing in Microsoft StreamInsight](#). March 2012.
- 18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS). Sponsor Demo Session. [Bing Maps, Bing Mobile, SQL Server, SQL Spatial and SQL Azure: Microsoft Technologies for GIS](#). San Jose, CA, Nov 2010.

## Services and Activities

### Invited Talks (cont'd)

- University of Wisconsin, Madison & Microsoft Jim Gray Systems Lab. [Data Stream Processing with Microsoft CEDR, Orinoco or StreamInsight](#). November 2009.
- Purdue TechFest, Purdue University. [From Purdue to Microsoft, a Five Year and Five Months Journey](#). October 2007.

### Panels

- Moderator for the panel titled, [Smartphones, Tablets, and Mobile Devices are Geostreaming](#). Panelists: Norm Bryar (Microsoft Bing), Yan Huang (University of North Texas), Ahmed Lbath (University of Grenoble - France), Moustafa Youssef (Egypt-Japan University of Science and Technology), the third ACM SIGSPATIAL International Workshop on GeoStreaming (IWGS). Redondo Beach, CA, November 2012.
- Moderator for the panel titled, [GeoStreaming: We can See the Light at the End of the Tunnel](#). Panelists: Balan Sethu Raman (Microsoft), Ed Katibah (Microsoft), Erik Hoel (ESRI), Farnoush Banaei-Kashani (USC), the first International Conference on Computing for Geospatial Research and Application (Com.Geo). Washington D.C., June 2010.

### NSF Proposal Reviewer and Panelist

- Reviewer and panelist for National Science Foundation (NSF), Computer & Information Science & Engineering (CISE), USA, 2011 and 2012.
- Invited to the Computing Community Consortium (CCC) and National Science Foundation (NSF) workshop: [From GPS and Virtual Globes to Spatial Computing – 2020: The Next Transformative Technology](#), Washington D.C., September, 2012.

### Editorial services

- Editorial board member of the [International Journal of Data Engineering \(IJDE\)](#)

## Services and Activities

### Conference Organization Committees

- [ACM SIGSPATIAL CUP 2012 and 2013](#)- Founding chair of the first and second ACM SIGSPATIAL CUP, a GIS related competition hosted by the SIGSPATIAL community, sponsored by Microsoft and NVIDIA, and co-located with the ACM SIGSPATIAL GIS Conference,
  - Orlando, FL, 2013
  - Redondo Beach, CA, 2012.
- [ACM SIGSPATIAL IWGS 2010, 2011, 2012 and 2013](#)- Founding chair and advisory board member of the “*International Workshop on GeoStreaming*”, co-located with the ACM SIGSPATIAL GIS Conference,
  - Orlando, FL, 2013
  - Redondo Beach, CA 2012
  - Chicago, IL, 2011
  - San Jose, CA, 2010
- [ACM SIGSPATIAL GIS 2010 and 2011](#)- Poster co-chair for the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems,
  - Chicago, IL, 2011
  - San Jose, CA, 2010
- [ACM SIGSPATIAL GIS 2009](#)- Local arrangement co-chair for the 17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS), Seattle, WA 2009.

### Helping Research in Developing Countries

I have been always excited about helping research in developing countries.

- I am a member of the education committee of the Egyptian American Scientists and Engineers (EASE) association and I participate in the research mentorship program. The objective of this program is increase the competitiveness of students and young professionals in Egyptian universities to achieve their career goals.
- I serve as an editor for the International Journal of Data Engineering. The target that we set for this journal is to promote quality database systems research in developing countries. Consequently, the guidelines of the submissions review process are established to mentor authors and to give them enough feedback to escalate their submitted and to-be-published work to a higher caliber that will eventually be published in the journal.

## Services and Activities

### Technical reviewer for journals, conferences and workshops

- IEEE Transaction on Knowledge and Data Engineering (TKDE) Journal
- ACM Transactions on Database Systems (TODS) Journal
- Very Large Data Bases Journal (VLDBJ)
- Distributed and Parallel Databases (DAPD) Journal
- ACM SIGMOD International Conference on Management of Data (2013, 2014) – Demo Track
- IEEE International Conference on Data Engineering (ICDE 2014) – Demo Track
- ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS) (2008, 2009, 2010, 2011)
- International ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE 2011)
- International Conference on Computer Systems and Applications (AICCSA) 2009

### Session chairing

- The research track session on “Moving Objects and Sensor Network”, the International Symposium on Spatial and Temporal Databases (SSTD), Minnesota, 2011
- The industrial track session on “Query Processing”, the International Conference on Very Large Data Bases (VLDB), Lyon, France, 2009

### Services and activities while affiliated with Purdue University

- Reviewer/ external reviewer for the three major database conferences (2002-2007):
  - International Conference on Very Large Data Bases (VLDB)
  - International Conference on Data Engineering (ICDE)
  - ACM SIGMOD International Conference on Management of Data
- The coordinator of the Database Seminar Series at the Department of Computer Science, Purdue University, Spring 2005 and Fall 2006

### Services while affiliated with Alexandria University, Egypt

- Scientific Computation Center (September 1999-August 2002)--- Alexandria, Egypt - Instructor of introductory computer classes designed to reduce computer illiteracy among a diverse population of public audience. Classes are offered as a community service. The audience age ranged between 10 years old and up to senior citizens with variable levels of education.
- Department of Computer Science, School of Engineering (September 2000-August 2002)---Alexandria, Egypt  
[Academic advisor](#) helping new grad students set up their academic plan



## References

Provided upon request.