
UW Database Research Group

“I have no data yet. It is a capital mistake to theorize
before one has data.”

Sherlock Holmes

Large Group...



**Ashraf
Aboulnaga**



**Edward
Chan**



**Ihab
Ilyas**



**Tamer
Özsu**



**Kenneth
Salem**



**David
Toman**



**Frank
Tompa**



**Grant
Weddell**

Other Affiliated Faculty

- Jeremy Barbay
 - Shai Ben-David
 - Charlie Clarke
 - Gordon Cormack
 - Ian McKillop
 - Ian Munro
 - Alex Lopez-Ortiz
- +**
- 30+ graduate students
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Very Productive ...

- Since 2001
 - 99 refereed publications
 - 25 journal articles
 - 74 conference/symposia/workshop papers
 - 43% in top venues (52% in 2004, 60% in 2005)
 - 5 book/handbook chapters, encyclopedia entries
 - 6 keynote addresses (+5 tutorials)
 - 8 patents (3 granted, 5 pending)
 - 4 edited books/proceedings
 - 27 graduate degrees awarded (8 PhD, 19 MMath)
 - HKUST, IU, Univ. Manitoba, Microsoft, iAnywhere, Alcatel, Samsung, IBM, MKS, Siebel Systems, ...)

Very Active ...

- Since 2001
 - ❑ 6 journal editorial board membership (including EIC)
 - ❑ 1 General Chairmanship
 - ❑ 9 Program Committee Chair/Vice-Chair positions
 - ❑ 98 Program Committee membership
 - ❑ Membership on the Computer Research Association Board
 - ❑ Chairmanship of ACM SIGMOD
 - ❑ Membership on ACM Publications Board
 - ❑ Membership of VLDB Endowment Board
 - ❑ Membership on a number of research management committees, research award committees, etc.
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Very Collaborative ...

- Universities

- Queen's, Bolzano, Roma La Sapienza, Dresden, Calabria, Buffalo, UBC, UIUC, Purdue, Toronto, CMU, Jyväskylä, Nantes, National Univ. Singapore, Hong Kong UST, NJIT

- Research Laboratories & Institutions

- IBM Almaden, AT&T Research, Bell Canada Univ. Labs, INRIA, National Informatics Institute of Japan

- Companies

- OpenText, Sybase, HP, IBM Toronto, Nortel Networks, Sun Microsystems

Wide Research Scope ...

- Extending & enhancing database systems
 - Advanced query processing (Ilyas)
 - Adaptive & self-managing database systems (Aboulnaga, Ilyas, Salem)
 - Security in databases (Salem, Tompa)
 - Distributed data management (Ilyas, Özsu, Salem)
- Data management for new domains
 - Embedded database systems (Toman, Weddell)
 - Internet-scale distribution (Özsu, Ilyas)
 - XML data management (Aboulnaga, Ilyas, Özsu, Tompa)
 - Spatial, temporal, and multimedia databases (Chan, Ilyas, Özsu)

Research Details

- **Advanced Query Processing**
 - Rank-aware query processing
 - Information Retrieval (IR) style queries
- **Adaptive & Self Managing Database Systems**
 - Statistics for query optimization
 - Reduce the cost and effort required for database administration and tuning
 - Interoperability with other components of the computing infrastructure
 - Storage virtualization and database systems
 - Database systems and application/web servers

Research Details

- Distributed Data Management
 - Classical distribution problems
 - Optimizing client/server interaction
 - Semantic pre-fetching
 - Predict the data the client will need and pre-fetch it
 - Replication for scalability and reliability
 - Synchronizing multiple replicas
 - Session-based consistency
 - Internet-scale data distribution
 - Stream data management
 - Stock tickers, sensor feeds, etc. \Rightarrow Queries persistent, data transient
 - One pass algorithms, sliding window algorithms
 - Web data management
 - Web query processing (QA systems)
 - Web caching
 - Peer-to-peer query processing
 - Top-k queries over P2P networks
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Research Details

- Embedded Database Systems
 - Data management within devices (e.g., telephone switches)
 - Security in Databases
 - Fine grained access control
 - Access control at the row or column level
 - Access control at the element level for XML data
 - Specifying access control
 - Enforcing access control during query execution
 - Access control for personally managed data
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Research Details

- XML Data Management
 - Document-centric XML applications
 - Document storage and management
 - Text transformations over very large databases
 - Storing XML data in relational databases
 - Encoding XML data for storage as relations
 - What are the limits of using relational databases to store XML?
 - Native XML storage
 - Storage structures (scalable, updateable, efficient queries)
 - XML query processing and optimization
 - XQuery and XPath query languages
 - Implementation of XPath operators
 - Selectivity and cost estimation
 - XML indexing
 - XML views for query execution
 - XML benchmarking (XBench)
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Research Details

- Spatial, Temporal and Multimedia Databases
 - Managing spatial and moving object data
 - Cost models for spatial data
 - Spatial indexing
 - Indexing moving objects
 - Buffer queries: For two data sets, find pairs of objects such that the distance between them is within a threshold
 - Route queries: Shortest path queries for large disk based graphs
 - Supporting time in databases
 - Removing old data from databases
 - Which data will not be requested by applications any more?
 - Multimedia data management
 - Video modeling and indexing
 - Similarity-based retrieval of time series and trajectories
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For more information ...

visit

<http://db.uwaterloo.ca/>