

# AMR F. EL-HELW

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## Research Interests

Databases Systems, Web Databases, Adaptive Query Processing and Optimization

## Education

### **PhD Student in Computer Science, University of Waterloo, 2005 - Present**

Thesis: Continuous and Adaptive Query Optimization

Advisor: Ihab Ilyas

### **M.S. in Computer Science, Alexandria University, Egypt, 2004**

Thesis: An Intelligent Database Application for the Semantic Web

Course work GPA 4.0/4.0

### **B.S. in Computer Science, Alexandria University, Egypt, 2001**

First degree of honor, GPA 3.9/4.0, ranked 4<sup>th</sup> in the class of 2001

## Honors & Awards

- IBM PhD. Fellowship, 2007-2008 and 2009-2010
- IBM Center for Advanced Studies (CAS) Fellowship, 2005-2008
- Distinction Award with the Degree of Honor for graduation from the department of Computer Science, Alexandria University, Egypt, 2001, Ranked 4<sup>th</sup>

## Research Experience

### **University of Waterloo, Waterloo, ON, Canada**

January 2005 - Present

#### ***Research Assistant in the School of Computer Science***

- Member of the Database Research Group
- Currently working on the **Continuous and Adaptive Query Optimization** project. This project studies enhancing the capabilities of current query optimization and execution to cope with the continuously changing computing environments. We investigate developing query optimization techniques that are highly adaptive to changes in the computing environment and to lack of accurate and up-to-date statistics. We also investigate developing an adaptive query execution framework that allows for continuous optimization of long running queries to respond to fluctuations and unexpected system changes

### **IBM T.J. Watson Research Center, NY, USA**

June - September 2010

#### ***Research Intern - Database Research Group***

Involved in database research, including topics on new database technologies, query processing techniques and data structures

### **IBM Toronto Software Lab, Canada**

Summer 2005, 2006 & 2007 and Fall 2008

#### ***CAS Student - Advanced Database Solutions Department***

- Developed and implemented JITS, a system for collecting and maintaining just-in-time statistics, inside the core DB2 code. Conducted extensive experimental evaluation. The work resulted in a patent submission and a publication in a major conference (ICDE 2007)
- Developed and implemented StatAdvisor, a tool for recommending statistical views for a given workload. The tool is implemented on top of the DB2 code. Conducted extensive experimental evaluation. The work resulted in a patent submission and a publication in a major conference (VLDB 2009)

**Alexandria University, Alexandria, Egypt** 2001 - 2004

***Research Assistant in the Computer Science Department***

- Worked with Intelligent Databases and Web Technologies
- Developed an Intelligent Database Application for the Semantic Web; using the techniques and the structures of the semantic web to create formal definition rules for unstructured data. The goal was to enable querying this data for information that is not stated explicitly and is very difficult to extract

**Professional Experience**

**University of Waterloo, Waterloo, ON, Canada** January 2005 - Present

***Research and Teaching Assistant in the School of Computer Science***

- Giving seminars and lab sessions
- Aiding in exam preparation and administration
- Grading exams, papers and assignments

**Alexandria University, Alexandria, Egypt** 2001 - 2004

***Teaching Assistant in the Computer Science Department***

- Gave seminars and lab sessions
- Aided in exam preparation and administration
- Graded exams, papers and assignments
- Courses taught included databases, operating systems, and data and file structures

**POET Egypt LLC, Alexandria, Egypt** 2003 - 2004

***Software developer***

- Participated in developing the *TV-Spielfilm* project as an out-sourcing project for the German corporation (ems ePublishing AG electronic media solutions). The project was built with JSP, Java, XML and Struts on an Oracle database. The main development tool in this project was Oracle JDeveloper
- Participated in developing the *ePublisher* project as an out-sourcing project for the German corporation (ems ePublishing AG electronic media solutions). The project was built using a number of technologies (JSP, Java, XML, Velocity, Turbine, Lucene and Hibernate) on an Oracle database. The main development tool in this project was Eclipse

**Planet Information Systems, Alexandria, Egypt** 2002 - 2003

***Software developer***

- Participated in developing *Planet Applications*, an integrated ERP (Enterprise Resource Planning) system. The system was developed using Oracle Developer and Oracle DBMS

**Universität Rostock, Rostock, Germany** June - August 2000

***Summer Intern - Institut für Geodäsie und Geoinformatik***

- Worked in a Remote Sensing and GIS project. Created scripts to extract information from large amounts of geological data, using ArcView software and its scripting language

**Patents**

**Recommending Statistical Views using Cost/Benefit Metrics**

Amr El-Helw, Ihab F. Ilyas, Calisto Zuzarte

U.S. Patent 7668804, February 2010

**Management of Interesting Database Statistics**

Amr El-Helw, Ihab F. Ilyas, Wing Lau, Volker Markl, Calisto Zuzarte

U.S. Patent Application 20090018992 A1, January 2009

## Presentations

**Column-Oriented Query Processing for Row Stores**  
University of Waterloo, October 2011

**Structured Querying of Text Databases**  
University of Waterloo, January 2010

**StatAdvisor: Recommending Statistical Views**  
VLDB'09, Lyon - France, August 2009

**Collecting and Exploiting Statistics on Query Expressions**  
University of Waterloo, April 2008

**Collecting and Maintaining Just-in-Time Statistics**  
ICDE'07, Istanbul - Turkey, April 2007

**Web Searching and Querying**  
University of Waterloo, September 2005

## Publications

**Column-Oriented Query Processing for Row Stores**  
Amr El-Helw, Kenneth Ross, Bishwaranjan Bhattacharjee, Christian Lang, George Mihaila  
In Proc. of the 14<sup>th</sup> ACM International Workshop on Data Warehousing and OLAP(DOLAP),  
Glasgow, Scotland, UK, 2011

**StatAdvisor: Recommending Statistical Views**  
Amr El-Helw, Ihab F. Ilyas, Calisto Zuzarte  
In Proc. of the 35<sup>th</sup> International Conference on Very Large Data Bases (VLDB), Lyon, France,  
2009

**Collecting and Maintaining Just-in-Time Statistics**  
Amr El-Helw, Ihab F. Ilyas, Wing Lau, Volker Markl, Calisto Zuzarte  
In Proc. of the IEEE International Conference on Data Engineering (ICDE), Istanbul, Turkey,  
2007

**An Intelligent Database Application for the Semantic Web**  
Amr F. El-Helw and Hussien. H. Aly  
In Proceedings of CSITeA-04, Cairo - Egypt, 2004

**An Intelligent Database Application for the Semantic Web**  
Amr El-Helw  
Masters Thesis, Alexandria University, Egypt, 2004

## Professional Activities

- External Reviewer for VLDB 2008
- Participated in developing the Educational Administrative System (EAS) for the Faculty of Engineering, Alexandria University, Egypt, 2004
- Participated in designing and developing the official web-site of Alexandria University, Egypt, 2001 - 2004

## Computer-related Skills

- **Platforms:** Windows, UNIX and Linux
- **Web Servers:** Internet Information Server (IIS), Apache and Jakarta Tomcat
- **Database Systems:** dBase, Clipper, Microsoft Access, MySQL, Oracle, PostgreSQL, and IBM DB2
- **Programming Languages:** PASCAL, C, C++, Visual Basic, Java, Assembly, PL/SQL and FORTRAN
- **Web development tools and languages:** HTML, XML, VBScript, JavaScript, ASP, JSP, Struts, Velocity, Turbine, Hibernate and Lucene
- **Graphics Libraries:** Java AWT, OpenGL, Gtk, and Gtkmm
- **Development Environments:** Oracle Developer (Forms & Reports), Microsoft Visual Studio 6.0, Microsoft Visual Studio .NET, Eclipse and Oracle JDeveloper (9i & 10g)

## Other Skills and Qualifications

- Problem solving
- Ability to work within a team
- Self confidence
- Challenging spirit
- Languages: Arabic (Native language), English (Fluent: Writing, reading and speaking)
- Leadership
- Logical and analytical thinking
- Resourcefulness
- Self motivation
- Creativity
- Communication
- Fast learning
- Willingness to travel or relocate

## References

Available upon request