

# Ayssam Yehia Elkady

PhD student,  
Department of Computer Science and Engineering,  
University of Bridgeport

575 Ellsworth st, apt 314  
Bridgeport, CT 06605  
860-303-9536  
[ayssam.elkady@gmail.com](mailto:ayssam.elkady@gmail.com)

## Research Interest

Software and Web Development, Database, Robotics, Mathematical Modeling, Automatic Control, and AI

## Education

- **PhD candidate** in the Department of Computer Science and Engineering, University of Bridgeport, Bridgeport, CT 06604, USA, fall 2007 – Present. Advisor: Prof. Tarek Sobh, the Dean of School of Engineering and Vice President for Graduate Studies and Research. (Expected December 2011)
- **M.Sc. in Computer Science** – School of Engineering – University of Bridgeport, Bridgeport – CT - USA (GPA is 3.909) from August 2007 to December 2008.
- **M.Sc. in Engineering Mathematics** – Faculty of Engineering - Alexandria University- Egypt from February 2004 to March 2006. M.Sc. thesis on "On the modeling and control of the cartesian parallel manipulator".
- **B.Sc. in Computer Science and Automatic Control** – Faculty of Engineering - Alexandria University- Egypt -June 2002. Grade: Distinction with degree of honor (87.65%)

## Graduation Project

**Project Name:** Learning Management System (LMS)

**Project Summary:** The core piece of E-Learning infra structure is known as the Learning Management System (LMS). The LMS supports and delivers the E-Learning contents. The LMS provides the ability to track, manage and report on learning activity and it can integrate with other enterprise systems.

- **Certifications**  
Microsoft .Net University Program (2002).

## Work Experiences

- From 11/27/2002 - until 8/15/2007: Teaching Assistant in Engineering Mathematics and Physics Department - Faculty of Engineering - Alexandria University - Egypt.
- Working for Alexandria Bibliotheca from 8/1/2002 to 11/30/2002 on the web development team using Visual Studio .NET (ASP.NET using C#), SQL Server 2000, Active Directory Services and XML & XSL technology. [[www.bibalex.org](http://www.bibalex.org)]
- From 8/15/2007 – until now: I am working as a research assistant and I am teaching a robotics course in University of Bridgeport. During this period:
  - Assisted 8 high school students for Lego competition organized by *NSBE (National Society For Black Engineer)*
  - Developing and constructing the mobile manipulation platform RISCBOT II, the objective is to build a hardware platform with redundant kinematic degrees of freedom, a comprehensive sensor suite, and significant end-effector capabilities for manipulation. The RISCBOT II platform differs from any related robotic platforms because its mobile platform is a wheelchair base. Thus the RISCBOT II has the advantages of the wheelchair such as high payload, high speed motor package (the max speed of the wheelchair is 6 mph), Active-Trac and rear caster suspension for outstanding outdoor performance, and adjustable front anti-tips to meet terrain challenges.  
[http://www.youtube.com/watch?v=\\_ozhRj0p7bQ](http://www.youtube.com/watch?v=_ozhRj0p7bQ)  
and <http://www.youtube.com/watch?v=EmQxAS0TNn0>
  - Fall 2009, I worked as a teaching assistant in Web-based applications course.

- Spring 2010, I worked as a teaching assistant in Object Oriented Programming with C++ course.
- Fall 2010, I worked as a teaching assistant in Web development and C# classes.
- In my PhD dissertation, I am developing a framework (RISCWare) for the modular design and integration of sensory modules, actuation platforms, and task descriptions that will be implemented as a tool to reduce efforts in designing and utilizing robotic platforms. The framework is used to customize robotic platforms by simply defining the available sensing devices, actuation platforms, and required tasks. The main purpose for designing this framework is to reduce the time and complexity of the development of robotic software and maintenance costs, and to improve code and component reusability. Usage of the proposed framework prevents the need to redesign or rewrite algorithms or applications due to changes in the robot's platform, operating systems, or the introduction of new functionalities. RISCWare is a robotic middleware used for the integration of heterogeneous robotic components. RISCWare consists of three modules. The first module is the sensory module, which represents sensors that collect information about the remote or local environment. The platform module defines the robotic platforms and actuation methods. The last module is the task-description module, which defines the tasks and applications that the platforms will perform such as teleoperation, navigation, obstacle avoidance, manipulation, 3-D reconstruction, and map building. The plug-and-play approach is one of the key features of RISCWare, which allows auto-detection and auto-reconfiguration of the attached standardized components (hardware and software) according to current system configurations. These components can be dynamically available or unavailable. Dynamic reconfiguration provides the facility to modify a system during its execution and can be used to apply patches and updates, to implement adaptive systems, or to support third-party modules. This automatic detection and reconfiguration of devices and driver software makes it easier and more efficient for end users to add and use new devices and software applications. In addition, the software components should be written in a flexible way to get better usage of the hardware resource and also they should be easy to install/uninstall. RISCWare core components have been developed in C++ for Linux. But due to the programming language independency of RISCWare, further components can be written in any language and on any platform.

- **Training Courses**

- Communications skills, June 3-5, 2006.
- Effective Teaching, June 10-13, 2006.
- Teaching with Technology, May 27-30, 2006
- Research Methodology, June 10-13, 2006.
- Thinking skills, June 14-16, 2006.

## **Technical Skills**

### 1. Programming Language:

- Java/J2EE: includes Multithreading, JSP, Servlet, and JDBC .
- C#: includes Windows programming, ASP.net, Windows Services, ADO.net, Xml, web services, and winforms.
- Oracle 8i and PL/SQL: include Tables, Views, Functions, Stored Procedures, PL/SQL, and Triggers.
- SQLServer 2000/2005: include Tables, Views, Functions, Stored Procedures, TSQL, and Triggers.
- HTML, DHTML, JavaScript, CSS, VB script, and XSL.
- Visual C++.
- Visual Basic 6.
- Assembly.
- Pascal.
- Lisp and Prolog.
- Oracle developer 2000.
- COM, MSMQ, and WCF
- Bash Scripts

### 2. Operating Systems:

- Windows 9x, NT, 2000 Server an XP.
- Ubuntu 10.04 and Red Hat Enterprise.

### 3. Software Package

- Microsoft Office and Power Point Producer.
- Matlab 7.
- Macromedia Authorware 6.
- Real Media tools: (Real Server, and Real producer).
- Windows Media Tools: (Windows Media Server, and Windows Media Encoder).
- Crystal Report 8.5.
- Latex.

## **Publication**

### • **Book Chapters**

1. Ayssam Elkady, Mohammed Mohammed, Eslam Gebriel, and Tarek Sobh, "Intelligent Behavior Modelling and Control for Mobile Manipulators", in "Pervasive Computing Innovations in Intelligent Multimedia and Applications", Series: Computer Communications and Networks published by Springer Verlag, 2009, ISBN: 978-1-84882-598-7.
2. Ayssam Elkady and Tarek Sobh, "Web-Based Control of Mobile Manipulation Platforms via Sensor Fusion" in Web-based Control and Robotics Education, in Series: Intelligent Systems, Control and Automation: Science and Engineering, Vol. 38. Editor: Tzafestas, Spyros G., 2009, ISBN: 978-90-481-2504-3.
3. Ayssam Elkady, Galal Elkobrosy, Sarwat Hanna and Tarek Sobh, "Cartesian Parallel Manipulator Modeling, Control and Simulation", in "Parallel Manipulators, Towards New Applications", April 2008, ISBN 978-3-902613-40-0.

### • **Journal Papers**

1. Ayssam Elkady, Mohammed Mohammed, Tarek Sobh, "A New Algorithm for Measuring and Optimizing the Manipulability Index", in the Journal of Intelligent and Robotic Systems, Springer Netherlands, December 2009.
2. Ayssam Elkady, Vipul Babariya, Jovin Joy, and Tarek M. Sobh, "Design and Implementation for a Sensory-Driven Mobile Manipulation Framework", in the Journal of Intelligent and Robotic Systems, Springer Netherlands, 2010.
3. Ayssam Elkady and Tarek Sobh, " Robotics Middleware: A Comprehensive Literature Survey and Attribute-Based Bibliography ", submitted to Journal of Robotics and Autonomous Systems, Elsevier on May 18, 2011.

### • **Conference Papers**

1. Ayssam Elkady, Jovin Joy and Tarek Sobh, "A Plug and Play Middleware for Sensory Modules, Actuation Platforms and Task Descriptions in Robotic Manipulation Platforms", ASME 2011 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2011.
2. Ayssam Elkady, Tarek Sobh, "Modular Design and Structure for a Mobile Sensory Platform", International Conference on Industrial Electronics, Technology & Automation (IETA), 2009.
3. Ayssam Elkady, Tarek Sobh, "Design and Implementation of a Multi-Sensor Mobile Platform", International Conference on Industrial Electronics, Technology & Automation (IETA), 2008.
4. Mohammed Mohammed, Ayssam Elkady and Tarek Sobh, "New Concept in Optimizing Manipulability Index of Serial Manipulators, Using SVD Method", International Conference on Industrial Electronics, Technology & Automation (IETA) 2007.
5. Ayssam Elkady, Sarwat Hanna and Galal Elkobrosy, "On the modeling and control of the Cartesian Parallel Manipulator", International Conference on Industrial Electronics, Technology & Automation (IETA), 2007.

## **Professional Membership and Activities**

- Member of technical committee, International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering, CISSE 2010.
- Member of technical committee and reviewers, the 7<sup>th</sup> International ASME/IEEE Conference on Mechatronics & Embedded Systems & Applications August 28-31, 2011, Washington, DC, USA

## **Awards**

- Best poster competition at the ASEE zone 1 conference, March 2008.
- First place in Massachusetts FIRST Tech Challenge Championship, Pathfinder Regional Vocational Technical High School, Palmer, MA 01069 by participating with the robotics team of Stables High School, Westport, CT on February 28th, 2009
- First place in The New York City FIRST Tech Challenge (FTC) Championship, Javits Center NY, by participating with the robotics team of Stables High School, Westport, CT on March 8th, 2009.