

AHMED M. E. AMIN

Personal Information:

Date of Birth: 19/07/1981 **Address:** 70 Mohd. Anwar El-Sadat
Occupation: Engineer **Rd. – Haram, Giza, Egypt**
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Current Degree & Status:

B.Sc. Computer Engineering, Faculty of Engineering, Cairo University - 2002

Grade: Distinction with honors

Rank: 2nd

Status: TA at the Faculty of Engineering, Cairo University

Graduation Project: Distributed Processing over Loosely Coupled Networks

Grade: Excellent

Completed the preparatory phase for the completion of the M.Sc. degree in computer engineering – Ranked 1st

MSc. Thesis Field – Image compression using sparse basis representation

Secondary Education:

GCSE (with English as a 1st Language)
Doha College, Doha, Qatar

Grades:

GCSE – 7 A*, 1 A, 1 B, 1 C
A/S Level Mathematics: A

Languages:

- Arabic (Fluent)
- English (Fluent)
- French (Good)

Skills:

- **Hardware analysis and design using VHDL**
- **Algorithm Analysis & Design**
- **Programming & Tools:**
C/ C++ (OOP) / Pascal
LISP, Prolog
Visual C++ 6.0
Visual Basic 6.0 / .NET
Visual Interdev
Matlab 6
Assembly Language (x86, PDP-11)
.NET Framework
C# .NET
Lotus Domino Designer
- **EDA Tools**
Mentor Graphics CalibreDRV
Mentor Graphics IC Station
Xilinx Webpack, Altera MaxPlusII
- **Databases:**
Database Concepts (Security, Integrity, Recovery, ...)
SQL Server2000
Informix 4th Generation Language (I4GL) under Unix
Oracle Designer 2000/ Oracle Developer
IBM DB2
Notes Databases
- **Teaching / Instructing**
- **Planning and project management**
- **Hardware Interfacing**
- **Embedded Systems**
- **CMM Activities**
- **Web Development:**
HTML, ASP
JavaScript, VBScript
XML
- **Operating Systems:**
Windows 9x/ Windows 2000
UNIX/ LINUX
- **Networks**
- **Simulation & Modeling**
- **Image Processing**
- **Compilers (lex & yacc)**

Fields of Interest

Grid Computing	Reconfigurable Computing
Image Processing & Compression	Computer Vision
Distributed Processing	Robotics & Computer Control
Video Streaming	Project Management

Hobbies:

Traveling
Listening to music
Sports (Billiards, Soccer, Squash, Swimming, Volleyball)
Reading
Surfing the web & chatting

Self Description:

“I am ambitious, well motivated, and ready to learn anything related to the computer engineering field. I believe that success comes from practice, and experience makes a person more productive. I really enjoy research that will eventually benefit mankind, as well as satiate my desire for a challenge. When I do what I enjoy I seek perfection and try to innovate...”

Experience & Achievements (Summary):

March 2004 - now	Mentor Graphics Egypt – Consulting Dept. (R&D)	Working on the implementation of an automatic analog reuse tool. I am working on the layout retargeting from one IC technology/process to another. Specifically, I have made modifications to the engine, as well as adding hierarchy support for the tool
July 2003 – Dec2003	Freelancing	Working on implementing an algorithm for enhancing predictions for currency and bond exchange with a Canadian investor
March 2003 – March 2004	IBM Cairo Technology Development Center	Working in the analysis, design and implementation of workflow applications targeted towards facilitating CMM activities within the organization
Oct 2002 – Jan 2003	Resala – Charity Organization	Helped with the design and implementation of a donation database, as well as designing and implementing an e-greeting website for the organization website
Sept 2002 – now	Faculty of Engineering, Cairo University	Currently a teaching assistant at the Computer Engineering Department. I am also working in the network administration for the faculty, as well as the faculty information systems and web site.
Aug 2002 – Sept 2002	Freelancing - ACCA	Developed a simple interfacing and control software for a prototype system that measures the tensile strength of different adhesives
Mar 2002 – Apr 2002	Freelancing – MS-G	Worked on designing and implementing the registration website for a conference
Jul 2001 – Sept 2001	Lucent Technologies, Whippany, NJ, USA	A 10 week summer internship in the reliability engineering group, wireless networks dept. I wrote scripts to automate the testing procedure of wireless radio units. Also helped with defining and structuring the FMA (Failure Mode Analysis) procedure and developed a website for the purpose
Summer 2000	ICL Egypt	Attended a 4-week summer training/job. I helped develop a database for Ain Shams Blood Bank
Summer 2000	NCR Egypt	Attended a UNIX Fundamentals course Attended a UNIX Administration course
Summer 2000	The Arab Contractors – IT Dept.	Designing a web site using ASP, HTML, VBScript & JavaScript to implement an online custom search engine for a server side database.
Oct 1999	IOI99 Antalya, Turkey	Participated in the International Olympiad in Informatics representing Egypt
Sept 1999	Cairo, Egypt	Achieved 2 nd place in the National Olympiad in Informatics (NOI)
Sept 1999	Cairo, Egypt	Attended a summer camp for training potential IOI competitors
June 1998	Faculty of Engineering, Cairo University	Attended a 3 week summer training (Introduction to VB, x86 Assembly Language, and electronic timing devices)
1997	Doha College, Qatar	Achieved the Senior Information Systems Award
1995	Doha College, Qatar	Achieved the Junior Science Award

Publications:

“Distributed Processing over Loosely Coupled Networks”, A Amin, A Azab, H Zakaria, A Nabawy, A Darwish, Proceedings of ICENCO 2004

<http://www.eng.cu.edu.eg/Users/ahmed/distpro.pdf>

Achievements, Awards and Scholarships:

2002-Now	Cairo University, Faculty of Engineering, Cairo University, Egypt	Teaching Assistantship
1997-2002	Cairo University, Faculty of Engineering, Cairo University, Egypt	University scholarship during my five undergraduate years
Sept 1999	Cairo, Egypt	Achieved 2 nd place in the National Olympiad in Informatics (NOI)
1997	Doha College, Qatar	Achieved the Senior Information Systems Award
1995	Doha College, Qatar	Achieved the Junior Science Award

Memberships:

- IEEE Student Memembr
- IEEE Computer Society
- Member of the Syndicate of Engineers, Cairo, Egypt

Current MSc. Thesis and research topic:***Image compression using sparse basis techniques***

Supervised by Prof. Dr. Amir Atiya & Prof. Dr. Samir Shaheen

Currently I am researching in image compression using sparse basis techniques. By providing a large dictionary of basis, and starting with Natarajan’s algorithm for basis selection, I am researching in achieving higher compression ratios than the baseline JPEG and similar research efforts while maintaining high PSNR and subjective quality for images. I am researching into enhancing the selection algorithm for better speed performance, as well as preprocessing techniques to give higher compression ratios.

Professional Part Time Positions After Graduation:**March 2004 - now**

Mentor Graphics Egypt, Consulting Department, R&D

Chameleon ART Project

We built a tool for automatic analog IC reuse. The tool should automatically retarget ICs from an older technology/ process (e.g. XFab 0.35 μ) to another (e.g. TSMC 0.18 μ). I am working on the layout migration and compaction of the retargeted netlist, considering design rule constraints (DRCs) and matching layout vs schematic (LVS). I have made alterations and enhancements to the core compaction engine, as well as additions for resistance support, and maintaining electrical characteristics after compaction. I am also working on adding hierarchical support for larger designs. The job is very challenging, and I had to read a lot of papers and work with a lot of existing code, as well as develop new code for hierarchy support. Development is done using

C++ on Solaris workstations, and testing is done using Mentor Graphics IC Station and Mentor Graphics Calibre and Calibre Design Review.

March 2003 – March 2004

IBM Cairo Technology Development Center, Cairo, Egypt

Quality Assurance Department

IBM CTDC was planning to achieve CMM level 3. To enhance the software process, my team had to design and implement a tool suite that automated many of the tedious workflow required in the processes. I had to learn several CMM concepts, as well as the organization procedures. The suite was architected and each tool was developed to conform to predefined specifications to allow scalability and interoperability. I learned a lot of software engineering concepts, as well as planning and project management skills, and used them in the development phase of the tools. Most of the suite was done using Lotus Domino Designer and IBM DB2 database engine.

September 2002 – Now

Network and Server Infrastructure

Computer Engineering Department & Faculty of Engineering

I am currently working on the design and maintenance of the IT infrastructure, labs, file servers, web servers, and mail servers for both the Computer Engineering Department and the Faculty of Engineering. I also worked on developing several of the faculty websites. I also aided in the re-engineering of the faculty student affairs database system.

September 2002 – Now

Teaching Assistantship

Computer Engineering Department, Faculty of Engineering, Cairo University

(Refer to Ahmed AMIN-Teaching Assistantship, Description of Courses)

Teaching Assistantship is slightly different in the computer engineering department than elsewhere. Not only are TAs required to solve examples, supervise labs, answer questions during office hours and mark assignments, but in some cases they are required to instruct. Material has to be gathered, courses, labs and projects have to be planned and eventually instructed. Quizzes and midterm exams in some courses are the responsibility of the TA. This academic content should supplement the lecture given by professors and provide deeper technical information and practical aspects. Students may also seek guidance and assistance from TAs on their graduation projects.

Courses I assisted in:

- *Data Structures lab, 1st Year*
- *Programming Techniques course, 1st Year*
- *Logic Design course & lab, 1st year*
- *Software Engineering Course, 2nd Year:*
- *Computer Graphics course, 2nd Year:*
- *Lab, 3rd Year*
- *VHDL Lab, 3rd Year*
- *Advances in Hardware Technology, 4th Year (Selective)*
- *Neural Networks, 4th Year*
- *Graduation Projects Supervision*

R&D Training:

- ***Summer 2001 - Lucent Technologies, Whippany, NJ, USA:***

During this ten week internship at the Wireless Networks Department, Reliability Engineering Group, I started by learning Failure Mode Analysis procedures. I had to design and implement a company intranet website that automates this procedure. I was also assigned the task of automatic the testing and monitoring a new TDM mobile base station radio unit. The units had to undergo accelerated life testing (ALT) before deployment. By using a proprietary scripting language, LabView, GPIB interfacing boards, spectrum analyzers, other digital measuring equipment and a PC, I had to test ten units by issuing test commands, running them in different modes, and collecting logs of different performance measures. There were a lot of problems in the setup where I learned a lot of troubleshooting skills. I managed to identify an error in the design of the boards that caused them to hang, thus potentially saving Lucent millions of dollars had the units been deployed.

Summer Training:

- ***Summer 2000 - The Arab Contractors – IT Dept.:***

The company had a database package for the Egyptian National Project Plan. They wanted to port it onto the web and add a search engine. With no previous web programming knowledge and a small team, we redesigned the database, learned ASP, HTML, VBScript and JavaScript, and started implementation. I gained knowledge in these languages, as well as my first interaction with the IIS web server.

Significant Projects/ Presentations in MSc Courses:

- *Lambda Calculus evaluator (Programming Languages and Evolution)*
- *Obstacle avoidance car (Embedded Systems):* Modified a remote control car by adding relay, infra-red sensors and an 8052 microcontroller. The car could navigate without collision by taking readings from the sensors and determining if there is an obstacle in its path.
- *Reliable Multicasting over Wireless Multihop Ad-Hoc Networks (Networks):*
Gave a presentation on a MSc. Paper written by a previous TA.

Graduation Project:

Distributed Processing over Loosely Coupled Networks – The proposed system provides a framework and protocol for distributing jobs to subscribed client machines. A central server is responsible for maintaining client status and handling new job requests. The application programmer is required to provide external interfaces to aid in the distribution process, rather than having to alter the existing code. The system is designed to work over any loosely coupled network, and several additions to the protocol guarantee robustness to network failures or misbehaving clients. The server is designed in a multi-threaded fashion to increase the performance and speed gained from distribution. The system was tested on a normal LAN with different numbers of subscribed clients. Client machines were chosen to have similar processing capabilities. The job was a computationally intensive application which analyzes the evolving cellular automata problem using genetic algorithms, as well as cracking RSA public keys.

Significant Projects/ Presentations in Undergraduate courses:

- *Fictitious Compiler (Compilers course, 4th year)*: Implemented a basic/C like compiler using C#, Lex & Yacc, that accepts source code written in our language, checks it for syntax errors, and generates assembly like code. The language supported function calls, arrays, and expression indexes for arrays.
- *Genetic Algorithm to solve the cellular automata problem (AI, 4th year)*: I implemented a GA to solve the cellular automata problem. In addition to that I created a Meta-GA that runs the GA using different parameters such crossover and permutation probabilities. Results were not significant but I managed to analyze the reasons for achieving such results.
- *Lisp Game (AI course, 4th year)*: Implemented a simple game using Lisp. When using library functions from the textbook (Artificial Intelligence – Elaine Rich, Kevin Knight) I discovered an error in the implementation of the A* algorithm
- *AI Understanding (AI course, 4th year)*: A presentation on the history and development in story understanding AI techniques
- *UMTS (Networks course, 4th year)*: A presentation on UMTS
- *OS Simulator (OS course, 3rd year)*: Designed and implemented a simulator that analyzes the performance of an OS job scheduler, memory management unit, and I/O utilization under different workloads
- *Genetic Algorithms Speech (IT course, 3rd year)*: Gave the class an overview on genetic algorithms, techniques, implementations, ...
- *Parallel PC2PC File Transfer Cable (Microprocessor course, 2nd year)*: Implemented a cable for connecting two PCs using the parallel port. The PCs used asynchronous transfer in the SPP protocol. I also developed the software and a GUI using assembly code and MSVC++ that partitions and transfers the files
- *Egyptian Consulate Database (Database course – 2nd year)*: Designed and implemented a database for the Egyptian consulates using Informix and I4GL. We went to the Ministry of Foreign Affairs to gather realistic requirements.
- *Mobile Network Operator Design (Software Engineering course – 2nd year)*: Went to Vodafone Egypt to gather realistic requirements and designed the software for managing customer information using standard software engineering procedures such as requirement definition, design cycle, design documentation...
- *Puzzle Game (Data Structures, 1st year)*: Created a game using Borland C that reads a bitmap image, partitions it, shuffles it, and allows the user to reshuffle the boxes to obtain the original image

Standard Test Scores:

TOEFL: 290 CBT Writing 6.0
GRE: Quantitative 790 (89%) Verbal 450 (45%) Analytical 5.5 (86%)