Ahmed Hamdy Abdel-Gawad, Ph.D.

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Education

Spring 2008-Summer 2014 **PhD in Computer Engineering: Purdue University, West Lafayette, USA, GPA: 3.97**
Department of Electrical and Computer Engineering:
Thesis: Maximizing Communication Performance via Automatic Optimization of Thread Mapping and Communication Routing
Research:

1. Scalable, Global, Optimal-bandwidth, Application-Specific Routing, submitted to **IPDPS**, 2016.
2. *RAHTM*: Routing-aware Hierarchical Task Mapping, **SC**, 2014.
3. *IMR*: Integrated Optimization of Thread Mapping and Communication Routing for Performance, Energy and Fault-Tolerance".
4. *TransCom*: Transforming Stream Communication for Load Balance and Efficiency in Networks-on-Chip, **MICRO**, 2011.
   A cycle accurate network simulator was built based on POPNET to measure the performance of the proposed transformations.
5. Sparse-posterior Gaussian Processes for general likelihoods, **UAI**, 2010.

Courses: Digital System Design Automation, Systems on Chip, Advanced Discrete Math, Linear Algebra, Random Variables and Signals, Advanced Computer Architecture, Statistical Machine Learning, Computational Biology and Machine Learning, and Statistical Network Analysis.

Fall 2003-Fall 2006 **MSc: Cairo University, Cairo, Egypt:** Computer Engineering Department
Preparatory courses: 87.8% - GPA 4
Thesis: A New Automated Integer Based Technique for Solving Systems of Boolean Equations.

Fall1998-Spring 2003 **BSc: Cairo University, Cairo, Egypt**
Computer Engineering Department, **Distinction (90.55%)**, **GPA: 3.99**
Graduation Project: A Full Hardware Implementation for an MP3 Decoder Chip using VHDL.

Professional Experience

Oct 2014 – present **Full time @ AMD – Sunnyvale, California:** Senior Software Development Engineer – Fabric

1. Built software modules to determine routing for the fabrics of SeaMicro products.
2. Designed a mathematical model to optimize for load balancing for given workloads.
3. Participated in the design of next generation fabric topology.
4. Implemented device drivers for PCIe devices.
5. Debugged critical system applications and Linux kernel problems.

Jun - Aug 2012 **Internship @ Nvidia – Santa Clara, California, United States:** Software Engineer
Performance verification: verified performance for new chips and also for new designs using C++ simulators.

Jan - May 2012 **Internship @ Intel – Hudson, Massachusetts, United States:** Software Engineer
Built C++ tools to migrate product designs to UPF standard and to support the standard.
Recognized with a CDS FE group award for the achieved work.

Oct 2003 - Sep 2004 **Full time @ Dataweb CH - Egypt:** Java Developer
Built Java components of JSET™– Built applications based on JSET™.

Jul - Aug 2002 **Internship @ IBM Egypt:** Software Engineer
Developed a C++ program for an NLP translation matcher.

Jul - Sep 2001 **Internship @ Lucent Technologies -Whippany, New Jersey, United States:** Software Engineer
Built a C++ performance simulator for base stations.

Awards

Intel: recognized with a CDS FE group award for the achieved work during the internship.

Skills

Languages	C/C++ (STL/BOOST), Java, Perl, Python, Assembly, VHDL, SQL, Embedded C, Php, Javascript.
SW. Env.	Matlab, ModelSim, Xilinx Webpack, Altera Quartus/Max-PlusII, Catapult, various DMBSs.
OSs	Linux, Unix, Windows.
Others	Simics, GEMS, MPI, OpenMP, Phoenix (Mapreduce), CPLEX, Gurobi, CBC, Popnet (NoC simulator), Hadoop, Lex/Yacc, Git, SVN, Gprof, Jira, Bugzilla.

Areas of Expertise

Computer Architecture (Major): networks-on-chip, interconnection networks.

Minor areas: algorithms, mathematical modeling (LP/MILP), SAT solving, supervised learning techniques, VLSI design, SoCs, digital system design automation.

Professional References

Sumit Agarwal, Amazon	Manager @ AMD	sumitagarwal1751@gmail.com
Venkat Ramakrishnan, HGST	Manager @ AMD	venkatkr@gmail.com
Sree Ganesan, Intel	Manager @ Intel	sree.ganesan@gmail.com

Academic References

Prof. Mithuna Thottethodi, Purdue University, mithuna@purdue.edu (PhD advisor)

Prof. Anand Raghunathan, Purdue University, raghunathan@purdue.edu

Prof. Milind Kulkarni, Purdue University, milind@purdue.edu

Extracurricular Activities

Treasurer, Egyptian Student Association @ Purdue • Resala Charitable Society • soccer, table tennis, chess

Publications

[1] Ahmed H. Abdel-Gawad and Mithuna Thottethodi, "RAHTM: Routing-aware Hierarchical Task Mapping", SC, 2014.

[2] Ahmed H. Abdel-Gawad and Mithuna Thottethodi, "TransCom: Transforming Stream Communication for Load Balance and Efficiency in Networks-on-Chip", MICRO, 2011.

[3] Alan Qi, Ahmed H. Abdel-Gawad, Thomas P. Minka, "Sparse-posterior Gaussian Processes for general likelihoods", UAI, 2010.

[4] Ahmed H. Abdel-Gawad, Amir F. Atiya and Nevin M. Darwish, "Solution of Systems of Boolean Equations Via the Integer Domain", Information Sciences, 2010.

[5] Ahmed H. Abdel-Gawad and Amir F. Atiya, "A New Accurate Approximation for the Gaussian Process Classification Problem", IJCNN, 2008.

[6] Ahmed Abdel-Gawad. "A New Automated Integer Based Technique for Solving Systems of Boolean Equations", M.Sc. thesis, Faculty of Engineering, Cairo University, Egypt, 2006.

[7] Ahmed H. Abdel-Gawad, Saad F. Abdel-Aziz, Ahmed M. Darwish and Ihab E. A. Talkhan, "A Full Hardware Implementation for an MP3 Decoder Chip using VHDL", 5th place in the student Contest of 46th IEEE International Midwest Symposium on Circuits and Systems, 2003.