

Alaaeldeen Elrouby

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A professor in electrical engineering with a long track of connecting academic research to industry with over 17 years of industrial experience in multinational corporations (IBM, Intel & Mento Graphics).

My areas of expertise and interest are in **applied electromagnetic**; signal and power integrity – EMC/EMI – antennas – RF and microwave – interconnect characterization and modeling.

ACADEMIC QUALIFICATION:

- Teaching experience in signal integrity, electromagnetics, antenna analysis and design, wave propagation, RF/MW engineering for both graduate and undergraduate students.
- Strong research record in applied electromagnetic (interconnect characterization and modeling- signal and power integrity - remote sensing – antennas – RF/MW systems).
- Solid analytical and experimental background in electromagnetic applications, millimeter-wave remote sensing and microwave measurements; including power, spectrum, and noise measurements, measurement of dielectric constant of materials, polarimetric radar cross section measurements, near and far-field antenna pattern measurements, and radar system calibration techniques.
- Solid analytical and research experience in microwave imaging techniques for medical applications and oil exploration.
- Long track of initiating and implementing academic-industrial cooperation within international organization (Intel and Mentor Graphics)
- 1 USA granted patent
- Published 1 book and 50+ international journal and conference papers.
- Supervised 11 master students thesis and 2 PhD students thesis to completion.

INDUSTRIAL QUALIFICATION:

- Strong organizational and managerial skills; Working on multiple tools and projects simultaneously and working successfully with different degrees of ambiguity. Leading and contributing to multiple projects and supervising a number of engineers in different time zones at the same time.
- Proven ability to analyze tactical and strategical team and group needs, offering solutions/proposals to fulfill those needs and finally supervise and implement such solutions.
- Innovative, creative, persistence, fastly adopting new concepts and techniques and dedicated to excellence.
- A long track of success in initiating, supervising and productization of research-drivin solutions to fulfill business needs in the EDA domain (macro-modeling optimization, TSV modeling, substrate noise modeling, SI in the FD, HF solution, STA and thermal solution for 3D-IC)
- A proven ability to analyze in production tools, identify its weakness and rearchitect it to overcome the weaknesses over multiple releases while maintining and adding new functionality in a very dynamic work environment

- Strong analytical background and industrial experience in signal integrity, I/O buffer modeling and optimization, interconnect characterization and modeling and power delivery for high speed digital system.
- Wide experience in developing electrical design rules for desktop, mobile, server and TIU CPU-platforms. Worked on a variety of system architectures, multiple interfaces and protocols swiftly and effectively.
- Experience with many simulation tools PSpice, HSpice, Speed2000, Ansoft-HFSS, ADS, and MATLAB and very good programming experience and skills.
- Industrial experience in world-class software development using Perl, Tcl, C/C++, UML and openMP.

EMPLOYMENT HISTORY:

Nov. 2015 till now

Yildirim Beyazit University, Faculty of Engineering and Natural Science, Ankara, Turkey
Associate professor then got promotion to professor in Jan, 2019
Electric and Electronic Dept.



- Teaching graduate and undergraduate courses in electromagnetic fields and waves, RF and microwave engineering, signal and power integrity and Antenna theory and applications
- Conducting research in signal and power integrity, modeling and electromagnetic applications

Sep.2005 to 2015

Cairo University, Faculty of Engineering, Giza, Egypt
Assistant Professor in the Electronics and Communication Dept.
Associate Professor (since Sept, 2011)



- Teaching undergraduate courses in electromagnetic, antenna theory and applications and wave propagation.
- Supervising graduation projects.
- Teaching graduate courses in signal integrity and power delivery.
- Supervising master students.
- Providing consultancy on a number of R&D project within the department.
- A point of contact for the department in the field of signal integrity and power delivery design for high speed digital systems.
- Providing signal integrity and power delivery training courses in the information technology institute, ITI and national telecom institute (NTI) in Egypt.

Jan.2008 to July 2014

Mentor Graphics Egypt, Cairo, Egypt
Staff Engineer in Calibre PEX

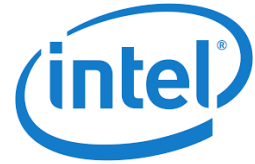


- Working on the silicon parasitic extraction tool, Calibre_xRC
- Modeling the parasitics of common silicon structures for different processes and technologies.
- Improving on the existing parasitic model accuracy and contributing to the tool integration with other tools.
- Supervising Mentor-sponsored graduation projects
- Representing Mentor Graphics, Egypt in many university and research related activities and forums.
- Technically leading the extraction tool refactoring using UML and C++.

- Exploring domains adjacent to parasitic extraction such as substrate noise coupling and statistical timing analysis.

Sep.2005 to Dec. 2007

Intel Corporation Egypt, LLC, Cairo, Egypt
Staff Signal Integrity Engineer



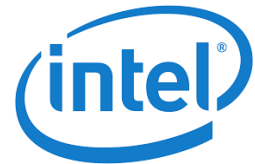
Mar, 2004 to Sep.2005

Intel Corporation, Chandler, AZ, USA
Senior Signal Integrity Engineer

- Main responsibilities include performing signal integrity and power delivery analysis, developing electrical design guideline, conducting validation and debugging studies and performing platform optimization to support the deployment and enabling of Intel platforms in different industry segments.
- I/O buffer modeling and optimization.
- Interconnect characterization and modeling as well as researching innovative solutions.
- Spend a considerable percentage of my time in the development and improvements of SI/PD capabilities of the team, through a research-like work, BKM and methodology development, new features and tool introduction and deployment and cooperation with other SI experts within Intel.
- Training and mentoring peer junior engineers.
- Leading and contributing to many studies, feasibility and design guideline development, on FSB, DDR2 and DDR3 Signal integrity.

Sep, 2000 to Mar, 2004

Intel Corporation, Sort/Test Technology Development, Chandler, AZ, USA
Senior SI/PI Test Engineer



- Introduced the frequency-domain method for power delivery design and analysis in STTD domain, trained peers on the method.
- Led the team of the power delivery design and analysis [a cross departmental, cross sites group]. Proposed, and led the team through the proof of concept and prototyping phases for the VRM on TIU technique. Patent disclosed.
- Proposed and prototyped an innovative current monitoring technique and circuitry for microprocessor TIU. Patent disclosed.
- Led two signal integrity teams for microprocessor PPV and 10G Ethernet device class test.
- Led STTD/ITTO 40G High Speed Test WG pathfinding to assess our readability for testing 40G products.
- Carrying on and supervising multiple individual and team projects at the same time and reporting to multiple forums of different management levels.
- Developed and presented RF Tutorial, 6-8 hours training, for STTD employees.

Aug, 1996 to July, 2000

University of Michigan, EECS Depart., Radiation Laboratory, Ann Arbor, MI, USA
Graduate Student Research Assistant



- Report to my academic supervisor, and cooperatively work within a research team of 10.
- Research involved designing and conducting a long series of experiments, model development, and data analysis.

- Developed an analytical model for the scattering by rough dielectric cylinders with application to tree trunks at MMW, and experimentally verified it
- Developed a tree trunk detection algorithm based on a new feature, FCFBW.

Sep, 1993 to Aug, 1996

IBM WTC, Egypt Branch, Giza, Egypt
Software Development Engineer



- Designing and implementing object-oriented client/server database application using C & C++
- Implementing and maintaining data retrieval application under both VM and MVS using PLAS, PLX, and REXX.

1993 to 1996

Cairo University, Faculty of Engineering, Giza, Egypt
Graduate Student Teaching Assistance



- Teaching assistant for courses in electromagnetic, and communications.
- Master research work includes development of an object oriented (C++) CAD package for analyzing general lossy waveguide discontinuities.

Consultancy and Training:

Jan.2018 (for 6 month)

Tübitak SAGE (Ankara, Turkey)

Consultant on SI/PI for High Speed Digital Designs

- Provided a thorough review for the design life cycle
- Provide mentoring on capacity building
- Provide design review on multiple high speed interfaces



August.2017

Tübitak UEKAE (Gebze, Turkey)

Visiting Instructor on signal and power integrity

- Offering an extensive training on signal and power integrity



Feb.2017

Tübitak SAGE (Ankara, Turkey)

Visiting Instructor on signal and power integrity

- Offering an extensive training on signal and power integrity



May.2016 to June 2016

Tübitak UZAY (Ankara, Turkey)

Visiting Instructor on signal and power integrity

- Offering an extensive training on signal and power integrity



Education:

July, 2000

Ph.D. Electrical Engineering - Remote Sensing
University of Michigan, Ann Arbor.



1996 **M.Sc.** Electrical Engineering - Microwave Engineering
Cairo University, Giza, Egypt.



1993 **B.Sc.** Electronics and Communications
Cairo University, Giza, Egypt.



Membership in academic or/and advisory committees :

- A technical member in the smart university forum (SUF) initiative in Egypt.
- A technical member of semiconductor research corporation (SRC)
- A technical member in Mentor Graphics higher education program (HEP) – Egypt committee
- A technical member in Mentor Graphics capacity building technical team focusing in research collaboration with Egyptian universities.
- An invited instructor in the information technology institute (ITI), Cairo – Egypt, VLSI graduate education program.
- An invited instructor in the national telecommunication institute (NTI), Cairo – Egypt, graduate education program.
- A member of the Egyptian Engineering Syndicate

Publications:

Thesis Writing

- 1- Alaa B. El-Rouby, "MMW Scattering By Tree Trunk and Surrounding Environment, Modeling & Analysis", Ph.D. thesis dissertation, 2000, University of Michigan, USA
- 2- Alaa B. El-Rouby, "Analysis and Design of RF Structures Used for Linear Accelerators", Master thesis dissertation, 1996, Cairo University - Egypt.

Books

- 1- "Arbitrary Modeling of TSVs for 3D Integrated Circuits", Authors: Khaled Salah, Yehea Ismail, Alaa El-Rouby, published by Springer, ISBN: 978-3-319-07610-2(Print) 978-3-319-07611-9 (Online).

Patent

- 1- Mohamed Saleh Abouelyazid Saleh (Cairo), Alaa El-Deen Barakat Ahmed El-Rouby (Cairo) "Modeling substrate noise coupling for circuit simulation", JUSTIS Patent number: 9330226. Granted on May 3, 2016. <http://patents.justia.com/patent/9330226>

Journal Papers

- 1- Abdelkader, Shohdy; El-Rouby, Alaa E;"Power-Aware Meshing Algorithm for Thermal Analysis of Integrated Circuits", IEEE Transactions on Components, Packaging and Manufacturing Technology, Volume 6, Issue 9, pages 1340-1348, September 2016
- 2- K Ali, E Yahya, A Elrouby, Y Ismail, "Library based macro-modeling methodology for Through Silicon Via (TSV) arbitrary arrays" - Microelectronics Journal, Volume 46, Issue 12, Pages 1291-1303, December 2015

- 3- Nabil, S. M., El-Rouby, A. B. and Khalil, A. H. , "An accurate power delivery system (PDS) design methodology for high-speed digital systems". International Journal of Circuit Theory and Applications, Volume 40, Issue 1, pages 37–47, January 2012. doi: 10.1002/cta.704
- 4- Tamer Sorour and Alaa El-Rouby "an isotropic algorithm for solving maxwell's equations in 2D", Journal of Electromagnetic Waves and Applications, volume 22, page 829-838, 2008
- 5- Alaa E. El-Rouby, A. Y. Nashashibi, and F. T. Ulaby, "Application of frequency correlation function to radar target detection", IEEE Transactions on Aerospace and Electronic Systems, Volume 39, Issue 1, Page(s):125 – 139, Jan. 2003.
- 6- Alaa E. El-Rouby, F. T. Ulaby, and A. Nashashibi, "MMW Scattering by Rough Lossy Dielectric Cylinders and Tree Trunks", IEEE Transactions of Geoscience and Remote Sensing, Volume 40, No. 4, Page(s):871 – 879, April 2002.
- 7- Roger Deroo, Fawwaz T. Ulaby, Alaa El-Rouby, Adib Nashashibi, " MMW radar scattering statistics of terrain at near grazing incidence", IEEE Trans. Aerospace and Electronic Systems, Vol. 35, No. 3, pp. 1010-1018 July, 1999.
- 8- Fawwaz T. Ulaby, Adib Nashashibi, Alaa El-Rouby,..... " 95-GHz Scattering By Terrain at Near-Grazing Incidence", IEEE Trans. Antennas and Propagation, Vol. 46, No. 1, pp. 3-13, Jan, 1998.

For full list of publications → <https://scholar.google.com.tr/citations?hl=en&user=oiKITqUAAAAJ>

Supervised Thesis

- 1- "Novel Frequency-Domain-Based Methodology for Signal Integrity", PhD thesis submitted by Ahmed Saeed Abdelsamea Sayed, Electronics and Communications Dept., Faculty of Engineering, Ain Shams University, Nov-2017. Supervised by Prof. Hany Fikry Ragai, Prof. Yehea Ismail Mohamed and Assoc. Prof. Alaa ElRouby.
- 2- "Thermal analysis of integratedcircuits", PhD thesis submitted by Shohdy Abd Elkader Ahmed, Electronics and Communications Dept., Faculty of Engineering, Ain Shams University, Sept-2017. Supervised by Prof. Hany Fikry Ragai, Assoc. Prof Mohamed Amin Dessouky and Assoc. Prof. Alaa ElRouby.
- 3- "MODELING TECHNIQUES FOR SUBSTRATE NOISE COUPLING", Master Thesis submitted by Mohamed Saleh Aboul-Yazeed Saleh, Electronics and Electrical Communications Engineering, faculty of engineering, Cairo university, 2013, Supervised by Dr. Ahmed Hussien Khalil and Dr. Alaa El-Rouby.
- 4- "STATIC TIMING ANALYSIS", Master Thesis submitted by Amr Ali Bakr, Electronics and Electrical Communications Engineering, faculty of engineering, Cairo university, 2013, Supervised by Dr. Alaa El-Rouby.
- 5- "CURRENT SOURCE BASED STANDARD-CELL MODEL FOR ACCURATE TIMING ANALYSIS OF COMBINATIONAL LOGIC CELLS" , Master Thesis submitted by Mohamed Mahmoud Mohamed Ahmed Ismail, Micro-electronics System Design, Nile University, February 2013. Supervised by Prof. Rafik Guindi, Dr . Amr Wassal and Prof. Alaa El-Rouby
- 6- "Acceleration of Genetic Algorithm for the One Dimensional Electromagnetic Inverse Scattering Problem", Master Thesis submitted by Hebatullah Hassan Mohamed Draz, Electronics and Communications Dept., Faculty of Engineering, Cairo University, January 2013. Supervised by Prof. Ahmed Hussien Khalil, Prof. Alaa El-Rouby and Dr. Mohamed Bakr Abdelhalim.
- 7- "MACRO-MODEL OF THROUGH SILICON VIAs (TSVs) Arrays", Master Thesis submitted by Kareem Ali Ahmed, Electronics Engineering Department, The American University in Cairo, August 2012, Supervised by Prof. Yehea Ismail, Dr. Eslam Yahya and Prof. Alaa El Roubly.
- 8- "Modeling And Characterization Of Through-Silicion Vias In 3d Integrated Circuits" , Master Thesis submitted by Karim Ahmed Tarek Raouf Amin, Micro-electronics System Design, Nile University, July 2012. Supervised by Prof. Rafik Guindi, Prof . Yehea Ismail, Dr. Ahmed Radwan and Prof. Alaa El-Rouby
- 9- "Formation Evaluation Using Electromagnetic Techniques", Master Thesis submitted by Mohamed Amin Mohamed Ali Abougabal , Electronics and Communications Dept., Faculty of Engineering, Cairo University 2010. Supervised by Prof. Adel Elnady, Dr. Alaa El-Rouby and Dr. Islam Eshrah

- 10-** "Interconnect Parasitic Extraction Macro-Modeling Optimization", Master Thesis submitted by Ahmed Abdellatif , Electronics and Communications Dept., Faculty of Engineering, Cairo University Jan-2010. Supervised by Prof. Ahmad Hussien and dr. Alaa El-Rouby
- 11-** "A Complete Solution For The PDS Design For High-Speed Digital Systems", Master Thesis submitted by Shaymaa Essaw, Electronics and Communications Dept., Faculty of Engineering, Cairo University March-2009. Supervised by Prof. Ahmad Hussien and dr. Alaa El-Rouby.
- 12-** "Microwave Imaging Algorithms Based On GA" Master Thesis submitted by M. El-Bayoumie, Electronics and Communications Dept., Faculty of Engineering, Cairo University Nov-2008. Supervised by Prof. Mostafa El-Said and dr. Alaa El-Rouby.
- 13-** "An Isotropic FDTD Algorithm For Solving Maxwell's Equations", Master Thesis submitted by Tamer El-Sayed El-Sayed Sorour, Electronics and Communications Dept., Faculty of Engineering, Cairo University, July-2007. Supervised by Prof. Essam Hashish and dr. Alaa El-Rouby.

Invention Disclosures Submitted

- 1-** "Crosstalk Reduction Technique For Modern Sockets Used With Processors And Integrated Controllers" , Aug-2007
- 2-** "Cable-Connected Termination/Series Resistance" , Aug-2006
- 3-** "Cable-Connected Dimm (Dual Inline Memory Module)" , Dec-2005
- 4-** "On-TIU, Vrm-Based Power Delivery Solution For Test" , Dec-2002
- 5-** "A Board-Level Dynamic Device Current (Icc) Real Time Measurement Method" , Jun-2001



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