# MOHAMED AHMED, Ph. D., P. Eng.

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## SUMMARY OF QUALIFICATIONS

- Work independently and in a team, hard worker and willing to learn new concepts;
- Fluent in English and Arabic (native tongue);
- Highly competitive, passionate, professional and persuasive, and good team player;
- Enjoy a multi-tasked, fast paced environment with the opportunity to resolve problems, ability to stay calm under pressure and meet deadlines;
- Enthusiastic, creative and willing to assume increased responsibility;
- Communicate clearly and listen carefully with a unique ability to handle challenges;
- Seventeen years' experience in electrical engineering transmission/distribution system design;
- Designed and commissioned low voltage circuits and lighting system for factories, large buildings, and shopping centers;
- Excellent analytical and problem solving skills;
- Extensive knowledge of the NERC and NPCC Operations and Planning Reliability Standards;
- Strong computer skills, including PSS/E, PROMOD, PLEXOS, DSA Tools (PSAT, VSAT, TSAT), MATLAB, CYME, ETAP, CEDEGS, CAPE, EMTP, EMTCD/PSCAD, Auto CAD, GAMS, C/C++, Python and other applications;
- Excellent experience with IBM software tools including Deep Thunder, InfoSphere Streams, WRF, and Agile Cloud computing;
- Excellent experience with MS WORD, EXCEL (Spread Sheets), Power Point and Access;
- Implement and interface different micro-processor based circuits;
- Design automated process for many production lines using PLC and SCADA systems;
- Consult many distribution and planning projects for modern and rural areas.

## EDUCATION

**Degree of Philosophy PhD,** Electrical and Computer Engineering Department, University of Waterloo, May 2008 – May 2012.
**Thesis Title: "**New Models and Analytical Frameworks for Power Systems with Wind Generation Penetration"
**Graduate Courses:** Electrical Power Systems, Energy Processing, Operation of Restructured Power System, and Advanced Optimization Problems with o*verall average* $\boldsymbol{A^+}$.

**Certificate in University Teaching (CUT),** Centre of Teaching Excellence (CTE), University of Waterloo, September 2010 – August 2011.
**Research Project: "**Improving Higher Education in Developing Countries - Egypt"
**Graduate Courses:** Preparing for University Teaching, Preparing of an Academic Career, Teaching Practicum.

**Master of Science,** Electrical Power and Machines Department, Ain Shams University, Cairo, Egypt, 1999-2005**.**
**Thesis Title: "**Power Quality Investigation and Improvement"
**Graduate Courses:** Coordinates Theory of Electrical Machines, Control of AC Drives, Neural Networks, Programmable Logic Control and Power system Network, w*ith overall average* $\boldsymbol{A^+}$.

**Bachelor of Science,** Electrical Power and Machines Department, Ain Shams University, Cairo, Egypt, 1994-1999
**4th year Project Topics:**
1. Transmission system fault allocation using PLC. (1st term project)
2. Automated Car Painting system. (2nd term project)

**Project tasks:**
- Designed a complete electrical design for an industrial area using MATLAB/SIMULINK and C++.
- Programmed different types of PLC (ALLEN-BRADLEY and SIEMENS)
- Developed programs using PIC877, ATMEL 8051 and MOTOROLA HC11 to control DC motors.

Rank**: *Ranked 3rd* in a 425-student class*, with overall average*** $A^+$**.**

## SPECIALITIES

- Expertise in power system planning, analysis, renewable energy, probabilistic and stochastic load flow studies, short circuit calculations and system restoration, distribution/transmission System Modelling; Comprehensive knowledge in power plant design, high/medium/low voltage designs and operation;
- Comprehensive knowledge of theory and application of Power System Engineering, Power System Stability, Protection and Control Systems, Single line Diagrams (SLD), Elementary Wiring Diagrams (EWD) and Connection Wiring Diagrams(CWD) for Transmission and Distribution systems.

## WORK EXPERIENCE

**Adjunct Assistant Professor,** Electrical and Computer Engineering Department, University of Waterloo, Waterloo, Canada, June 2016 – Present.

- Teaching graduate/undergraduate courses related to electrical engineering, renewable energy, power systems, asset management, power system optimization, distribution systems and power system planning.
- Co-supervise M.Sc. and Ph.D. students
- Participate in various ECE department activities.

**Senior Planning Engineer,** Grid Solutions Department, Hydro & Power Delivery, SNC-Lavalin, Toronto, Canada, May 2016 – Present.

- Responsible for assignments involving transmission and distribution system planning, generation and load connection assessment, long term transmission visioning, grounding, transient and lightning studies.
- Responsible for delivering technical work involving development of long term transmission plans and transmission feasibility studies, the integration of renewable energy resources in North American transmission systems.
- Perform following power system studies for HV/EHV Power projects using state of the art Engineering Software: Insulation Coordination, Load Flow, Voltage Stability, Short Circuit, Lightning and Switching transients, Circuit breaker Transient Recovery Voltage, Power Transformer inrush EMTP studies, Lightning Shielding of substations from direct strokes, Grounding Studies, Rigid & Flexible bus design Calculations, and Power Cable Sizing.

**IESO Distinguished Research Fellow,** Center of Urban Energy, Ryerson University, Toronto, Ontario, Canada, December 2015 – April 2016.

- Researched the energy storage technologies and their different applications and wrote white papers to document findings.
- Spoke at industry conferences and events, including moderating a panel on the energy storage benefits, opportunities and challenges.
- Organized workshops at CUE for stakeholders, system operators and utilities to discuss the R&D challenges/needs for energy storage.
- Supervised the work of research assistants.
- Reviewed student award applicants, interviewed finalists, and recommended winners.
- Liaised with industry experts and conducted tours of Ryerson's smart grid lab.

**Engineer/Technical Officer,** System Performance Department, Independent Electricity System Operator (IESO), Mississauga, Ontario, Canada, September 2014 – December 2015.

- Developing and maintaining power system models used in power flow, short circuit, transient and dynamic stability analysis of the IESO controlled grid.
- Assess the impact upon reliability of taking an equipment out-of-service.
- Receive assignments from the Supervisor in general terms on specific problems related to assigned areas of work and obtain the necessary data for problem solution.
- Safeguard the confidentiality of Market Participant data.
- Using PSS/E and DSA tools to perform tests to validate market participant models and data.
- Resolving model and data related power system operation issues, developing and implementing solutions.
- Providing technical support to the On-Line Limits Derivation (OLLD) Project (WINTOP) on network modeling and tools.
- Maintaining on-line network models in support of EMS and on-line dynamic security assessment applications.
- Developing software to facilitate system data collection to automate the power system analysis process.
- Interfacing with Market Participants to gather equipment model and data for their registered facilities.

**Adjunct Assistant Professor,** Ryerson University, Faculty of Engineering and Architectural Science, Toronto, Canada, May 2013 – May 2016.

- Teaching graduate courses related to renewable energy, power system asset management, power system optimization, distribution systems and power system planning.
- Co-supervise M.Sc. and Ph.D. students
- Participate in various ECE department activities.

**Senior Research Scientist,** IBM, Research and Development Department, **First accepted project** to The Southern Ontario Smart Computing Innovation Platform (SOSCIP), Project title: "Weather Forecasting Effect in Reliability Evaluation of Electrical Transmission & Distribution Systems", Waterloo, Ontario, Canada, September 2012 – September 2014.

- Review reliability evaluation techniques, factors that influence power system reliability, and the basic concepts of weather modeling;
- Examine the existing weather models and extend them to reflect the effect of continuously changing stress created by weather in reliability assessment of transmission system using the IBM forecasting weather data;
- Use IBM weather forecasting tool "Deep Thunder" to forecast weather in Southern Ontario.
- Develop a series of multi-state weather models to be used to predict the system failure rate, outage duration and unavailability and develop an outage forecast model.
- Introduce an approach to incorporate the reliability indices into a series of weather specific indices using IBM InfoSphere Streams that extract online real time data from NOAA website.
- Use Agile Cloud computing to illustrate the application of weather modeling on practical transmission and distribution systems.
- Seek the relation between summer lightning activity and power outages, and then investigate possible relationship between flash density and outages.
- Present a series of sensitivity studies for the various percentages of failures occurring in adverse and extreme weather conditions.

**Post-Doctoral Fellowship,** University of Waterloo, Electrical and Computer Engineering Department, Waterloo, Ontario, Canada, June 2012 – September 2012

- Participate and engage in the development and dissemination of research in the field of smartgrids and microgrids.
- Prepare and write research proposals in the area of power system distribution.
- Develop relationships with individuals and groups from industry and outside the School, to discuss shared research interests and explore potential future collaboration and to contribute to teaching/training activities in the area of fellowship.

**Project Leader,** MITACS – Accelerate (Hydro-One, Ryerson University, University of Waterloo), **"**Decentralized Operation of Smart Distribution Networks based on a Multi-Agent Framework", Centre of Urban Energy (CUE), Toronto, Canada, May 2011 – April 2012.

- Propose a multi-agent system for energy resource scheduling of an islanded power system with distributed resources and energy storage elements.
- Develop a model that consists of integrated micro-grids, lumped loads, and a variety of storage devices.
- Apply the distributed intelligent multi-agent technology to make the power system more reliable and efficient, and capable of exploiting and integrating alternative sources of energy.
- Implement the developed models in one of the existing Ontario distribution systems owned by Hydro One.
- Recommendation for proper implementation of the proposed multi-agent system to the project manager.

**Part-time Researcher,** University of Waterloo/IESO, Waterloo, Electrical and Computer Engineering Department, Canada, May 2015 – December 2015, developing the **first Demand Response Auction Model in Ontario.**

- Procurement of IESO specific data required for model development.
- Consultation with IESO regarding model requirements.
- Development of DR auction model incorporating all IESO market related issues.
- Present scenarios and case studies for different system conditions and customized it for Ontario.
- Discussions with IESO, review of model, and model performance analysis.
- Training to IESO team on DR Auction Tool, mathematical model and MATLAB codes.
- Develop a user support document for MATLAB codes with instructions and guidelines
- Additional ad-hoc test cases as requested by DR Project Team
- Vendor and User Testing support for market Trials and Audit

**Part-time Researcher and Project Manager,** University of Waterloo, Electrical and Computer Engineering Department, Canada, September 2012 – April 2016. Serve as Lead Research Project Manager for research studies in both Canada and abroad. Provide overall management of studies. Maintain ongoing direct contact with PI, co-investigators and research partners to ensure adherence to research protocols and quality of data. Supervise other research staff, interns and student fellows. Participate as a major contributor to grant writing and development, research study design, data analyses and project development and planning. Perform intermediate to advanced statistical analysis. Author and co-author manuscripts, develop and present presentations at scientific conferences. Responsibilities include:

- Manage and track budgets and resources to assure efforts are in compliance with project guidelines;
- Assist with preparation and submission of grants;
- Coordinate the evaluation of procedures implemented during pilot studies to determine necessary design and logistical changes for main study;
- Coordinate meetings, phone conferences, minutes and presentations for multiple projects/studies and serve as liaison with internal departments and external entities;
- Advise administrators on research methodologies, available data, and other resources;
- Create financial and statistical reports for Principal Investigators and division/department executives;
- Analyze information and recommend spending activity;
- Represent department research interests at institutional workshops and meetings;
- Communicate funding opportunities to departmental faculty;
- Publish papers as author or co-author.

**Part-time Instructor,** Educational Program Innovations Center (EPIC), Mississauga, Canada, January 2013 – April 2016.

- Teaching two courses (ELE-A6: Power Systems and Machines and ELE-B7: Power Systems Engineering).
- These courses offered as a part of the Technical Exams Preparations Program (TEPP) offered by EPIC. This program helps immigrants, new Comers, internationally educated engineers to Canada to prepare for both Confirmatory and Technical Exams as assigned by the Professional Engineers of Ontario (PEO).

**Part-time Lab Instructor,** University of Waterloo, Electrical and Computer Engineering Department, Canada, January 2013 – September 2014. (Courses: ME269 "Electromechanical Devices & Power Processing", ECE462 "Electrical Distribution System", MTE320 "Actuators and Power Electronics", ECE124 "Digital Systems", ECE224 "Embedded Systems")

- Develop experiments and write laboratory manuals in conjunction with the faculty;
- Manage the assigned laboratory facility; maintain the technical and safe operation of the laboratories; keep laboratories current with emerging technology;
- Develop physical laboratory layouts; develop equipment and software specifications; oversee the completion of assigned projects (purchasing, installation, integration, and testing); design, create, and test special laboratory apparatus or software.

**Part-time Senior Electrical Engineer, R&D,** Eyedro Green Solutions Inc., MITACS-Enterprise Internship, Kitchener, Ontario, Canada, July 2012 – March 2013

- Develop a tool to identify different electrical appliances for residential loads.
- Study different common residential load wave forms using ETAP and EMTP to generate different load current signature wave forms.
- Formulate an optimization model using GAMS, then try different solvers to solve the problem.
- Interpret and transfer the developed code and algorithms to HTML platform
- Test and Implement the developed code and algorithm online and troubleshoot any unexpected outcomes

**Part-time Researcher,** IESO (Independent Electricity System Operator) – Project: "Variable Generation Modeling and Analysis Tool", Reliability Assessments Department, Mississauga/Waterloo, Ontario, Canada, October 2011- June 2012.

- Using historical wind and solar data to design a comprehensive tool based on a Graphical User Interface (GUI) capable of modeling the stochastic nature of variable generation output (wind and solar).
- Develop a tool capable of producing time series profiles of wind and solar generation (MW output) with at least an hourly granularity.
- The developed tool has the ability to generate simulated hourly wind and solar MW output profiles that have statistical properties based on the following weather-related characteristics: diurnal and seasonal patterns; temporal/auto-correlations; spatial correlation; and electricity demand.
- The project involved hands-on experience with 10 Ontario generation zones including 200 wind and solar generation sites.

**Sessional Course Instructor,** University of Waterloo, Electrical and Computer Engineering Department, Canada, January 2011 – April 2011. (Course: ME269 "Electromechanical Devices & Power Processing")

- Conduct lectures to students.
- Supervise course labs.
- Prepare mid-term and final exams.

**Sessional Lab Instructor,** University of Waterloo, Electrical and Computer Engineering Department, Canada, May 2011 – April 2012. (Courses: "Electromechanical Devices & Power Processing", "Electrical Distribution System", "Actuators and Power Electronics")

- Develop experiments and write laboratory manuals in conjunction with the faculty;
- Manage the assigned laboratory facility; maintain the technical and safe operation of the laboratories; keep laboratories current with emerging technology;
- Develop physical laboratory layouts; develop equipment and software specifications; oversee the completion of assigned projects (purchasing, installation, integration, and testing); design, create, and test special laboratory apparatus or software.

**Research and Teaching Assistant,** University of Waterloo, Electrical and Computer Engineering Department, Canada, May 2008 – May 2012.

- Research techniques for increasing the penetration level of renewable energy to the grid.
- Conduct tutorials to students.
- Supervise course labs.
- Correct assignments and exams.

**Part-time Consultant Engineer**, Degremont Company, Subsidiary of Suez Environnment, Cairo, Egypt, February 2004 – March 2006.

- Supervise the High voltage and low voltage maintenance team;
- Carry out all the maintenance work for HVSWGR, LVSWGR, MCC, and LIGHTING PANELS;
- Carry out all the maintenance for PLC and SCADA systems and make any required modifications;
- Develop and maintain the planed preventive maintenance programs (pumps, penstocks, fans, compressors, mixers, scrapper bridges, high masts);
- Arrange between the electrical and mechanical teams to perform the maintenance with the best way and in the shortest time;
- Give electrical safety training for all the staff in the company.

**Research and Teaching Assistant**, Ain Shams University, Electric Power and Machines Department, Egypt, September 1999 – April 2008.

- Conduct tutorials to students. (Courses: Electromagnetic fields, power systems, digital control, system modeling, circuits, transmission lines, analogue control systems, power system planning and project management)
- Supervise course labs.
- Perform short circuit, Load Flow, Protective Relay Coordination utilizing state-of-the-art software;
- Design large and/or complex power distribution, lighting design, fire alarm, security, audio/visual, telecommunications, and telephone systems for new and renovated and for a variety of building types;
- Experience high, medium and low voltage systems design including specifying, power distribution, schematics, layouts, grounding system, and secondary systems, estimating and load studies;
- Knowledge of the National Electrical Code (NFPA 70), the National Fire Alarm Code (NFPA 72), and the Life Safety Code (NFPA 101).

## PROFESSIONAL MEMBERSHIP

- Registered Professional Engineer (P. Eng.) in the province of Ontario.
- Registered in Ontario Society of Professional Engineers (OSPE).
- Registered Engineer with the Egyptian Syndicate of Engineers.

## PUBLISHED WORK

**Journal Papers:**

1. A. Almutairi, **M. H. Ahmed**, and M. Salama, "Probabilistic Generating Capacity Adequacy Evaluation: Research Roadmap", Electric Power Systems Research, vol. 129, December 2015, pp. 83–93.
2. Ameena Saad Al-Sumaiti**, M.H. Ahmed**, M.M.A. Salama, "Residential Load Management under Stochastic Weather Condition in Developing Countries," Electric Power Components and Systems, vol. 42, pp. 1452-1473, 2014**.**
3. Nazila Rajaei**, M.H. Ahmed**, M.M.A. Salama, "Fault Current Management Using Inverter-Based Distributed Generators", IEEE transactions on Smart Grid, Vol. 5, No. 5, September 2014, pp. 2183 - 2193**.**
4. Ameena Saad Al-Sumaiti**, M.H. Ahmed**, M.M.A. Salama, "Smart Home Activities: A Literature Review", *Electric Power Components and Systems*, 42(3–4):294–305, 2014
5. A. Almutairi, **M. H. Ahmed**, and M. Salama, "Evaluation of the Generating Capacity Adequacy of the Saudi Arabian Central Operating Area," Electric Power Components and Systems, vol. 42, pp. 83-90, 2014.
6. **M.H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Probabilistic Distribution Load Flow with Different Wind Turbine Models", IEEE transactions on Power Systems, Vol. 28, No. 2, May 2013, pp. 1540-1549**.**
7. **M.H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Stochastic Unit Commitment with Wind Generation Penetration", *Electric Power Components and Systems*, No. 12, Vol. 40, pp. 1405-1422, August 2012.
8. Nazila Rajaei**, M.H. Ahmed**, M.M.A. Salama, "Modified Newton-Raphson Algorithm for Fault Analysis of Loop Systems with IBDGs", submitted to IEEE Transactions on Sustainable Energy - Manuscript ID is TSTE-00668-2015 – **In review**.
9. Ameena Saad Al-Sumaiti**, M.H. Ahmed**, M.M.A. Salama, "A Novel Probabilistic PV Power Model for Scheduling Applications", submitted to IEEE transaction on Sustainable Energy, Manuscript ID is TSTE-00647-2015 – **In review**.
10. Ahmed Samir, **M.H. Ahmed**, T. El-Fouly, M.M.A. Salama, "The Impact of Wind Farm Location and Control Strategy on Wind Generation Penetration and Market Prices", submitted to IEEE Transactions on Power Systems - Manuscript ID TPWRS-00511-2015 – **In review**.
11. Ayman H. Elkasrawy, **M.H. Ahmed**, Bala Venkatesh, "Demand Response Procurement Method Using an Options Contract Technique", submitted to IEEE transaction on Power Systems, Manuscript ID is TPWRS-00311-2016 – **In review**.
12. Abdulaziz Almutairi, **M. H. Ahmed**, M. M. A. Salama, "Evaluation Study of the Effect of PEV Charging Loads on the Adequacy of Generating Capacity", submitted to IEEE transaction on Sustainable Energy, Manuscript ID is TSTE-00316-2016 – **In review.**
13. Yasser Hegazy, Radwa Sayed, **M.H. Ahmed**, M.M.A. Salama, "A Sequential Monte Carlo Simulation Approach for Power Production Estimation of Wind and Photovoltaic Based Power Generators" submitted to IEEE Transactions on Power Systems - Manuscript ID TPWRS-00308-2016– **In review**.
14. Hani Aldhubaib, **M. H. Ahmed**, M. M. A. Salama, "A New Weather-Based Predictive Reliability Assessment Method That Incorporates Weather Forecasts", submitted to IEEE transaction on Power Systems, Manuscript ID is TPWRS-00630-2016 – **In review**.
15. M.F. Shaaban, **M. H. Ahmed**, "Optimal Power Flow for Real-Time Applications in Unbalanced Smart Distribution Networks" submitted to IEEE Transactions on Smart Grids - Manuscript ID is TSG-00620-2016– **In review**..
16. Nazila Rajaei**, M.H. Ahmed**, M.M.A. Salama, "Construction of Protection Zones with Self-Healing Capability in Loop Systems with IBDGs" **prepared to be submitted to IEEE transaction on Smart Grids.**

**Patents:**

M. El-Khatib, **M. H. Ahmed**, M.M.A. Salama, R. El Shatshat, "Decentralized Volt/VAR Control for Advanced Distribution Automation Systems", Nov. 2012, US20140148966 A1

**Conference Papers:**

1. S. R. Chaudhry, W. Alhelal, S. Abueida, T.K. Abdel-Galil, **M. H. Ahmed**, F. Ceja-Gomez, M. El-Chehaly, "Application of Fault Current Limiters for 400KV KAHRAMAA Power Grid", submitted to 2016 CIGRE GCC POWER, Doha, Qatar.
2. **M. H. Ahmed**, Mohamed Arif, Mohamed Al-Ghawzi, Willy Kotigua, "Quantifying the Value of Pumped Storage Hydro (PSH) in the Saudi Electric Grid", submitted to 2016 CIGRE GCC POWER, Doha, Qatar.
3. A. Almutairi, **M. H. Ahmed**, M. M. AL-Ghawazi, "Evaluating the Effect of Renewable Energy Sources into Reliability Performance of Generation System of the North West Operating Area in the kingdom of Saudi Arabia", abstract accepted to Saudi Arabia Smart Grid Conference 2016.
4. Nazila Rajaei, **M.H. Ahmed**, M.M.A. Salama, "A Novel Newton-Raphson Algorithm for Power Flow Analysis in the Presence of Constant Current Sources", 2016 IEEE PES Transmission & Distribution Conference & Exposition Proceedings, 03 May - 05 May 2016, Dallas Convention Center, 650 S. Griffin St., Dallas, TX, USA.
5. Nazila Rajaei, **M.H. Ahmed**, M.M.A. Salama, "Comparison of the Effects of IBDGs and Synchronous DGs in Fault Condition", the 42nd Association of Egyptian American Scholars (AEAS) Annual Conference, Dec. 27 – Dec. 29, 2015, Ain Shams University, Cairo, Egypt.
6. M.F. Shaaban, **M. H. Ahmed**, T.H.M. EL-Fouly, M.M.A. Salama, "Impact of Integrating PEV and Renewable Sources on Power System Reliability Assessment", the International Conference on Electric Power and Energy Conversion Systems, American University of Sharjah, UAE – November 24–26, 2015, Sharjah, UAE.
7. M. El-Khatib, **M. H. Ahmed**, R. El Shashat, M.M.A. Salama, "Autonomous Decentralized Distribution System Restoration Algorithm", the 2015 International Symposium on Smart Electric Distribution Systems and Technologies (EDST 2015) - CIGRE SC C6 Colloquium, Vienna, September 8th to September 11th, 2015.
8. Abdulaziz Almutairi, **M. H. Ahmed**, M. M. A. Salama, "System Adequacy Assessment with Wind Power Generation using Monte Carlo Markov Chain Method", accepted for presentation at International Science And Technology Conference (ISTEC), September 2nd to September 4th 2015 at St. Petersburg, Russia.
9. **M. H. Ahmed**, M. El-Khatib, R. El Shashat, M.M.A. Salama, "Transformer Health Index Estimation Using Orthogonal Wavelet Network", the 2015 IEEE Electrical Power & Energy Conference (EPEC2015), London, Ontario, Canada, October 26 -28, 2015.
10. Abdulaziz Almutairi, **M. H. Ahmed**, M. M. A. Salama, "Inclusion of Wind Generation Modeling into the Conventional Generation Adequacy Evaluation", Electrical Power and Energy Conference (EPEC), 2014 IEEE, 122-127, 14th Electrical Power and Energy Conference, November 2014.
11. Nazila Rajaei, **M.H. Ahmed**, M.M.A. Salama, "Analysis of Fault Current Contribution from Inverter Based Distributed Generation", IEEE PES General Meeting, Washington DC, July 2014**.**

12. Ahmed Samir, **M.H. Ahmed**, T. El-Fouly, M.M.A. Salama, "A Probabilistic Approach to Assess Wind Generation Penetration and Market Prices", IEEE CCECE 2014: Symposium on CUE-ORF-RE workshop, May 2014.
13. M. El-Khatib, **M. H. Ahmed**, R. El Shashat, M.M.A. Salama, "Optimal Real-Time Coordinated Voltage and Reactive Power Control in Smart Grids", IEEE CCECE 2014: Symposium on CUE-ORF-RE workshop, May 2014.
14. Abdulaziz Almutairi, **M. H. Ahmed**, M. M. A. Salama, "Different Representation Models For Integrating Wind Energy Into Generating Capacity Adequacy Assessment", 2013 CIGRÉ Canada Conference, Westin Calgary, Calgary, Alberta Canada, September 9-11, 2013.
15. **M. H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Evaluation of the Environmental Impact of Wind Generation Penetration", IEEE PES General Meeting 2012– California, San Diego. July 22 -26, 2012.
16. Y. Chow, **M. H. Ahmed**, M.M.A. Salama, "Accurate Inductance of an Air Core Solenoid in a Rapidly Convergent Series Form", INDUCTICA 2012 Conference, Berlin Germany, June 2012.
17. Y. Chow, **M. H. Ahmed**, M.M.A. Salama, "Simple and Exact Inductance Formula of a Circular Loop" INDUCTICA 2012 Conference, Berlin Germany, June 2012.
18. **M. H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Renewable Energy Environmental Effects", ICGST International Conference on Recent Advances in Energy and Power Systems, Alexandria, Egypt, April 2012.
19. **M. H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Operations Analysis of Wind Penetration into Distribution Systems Using PDLF" Middle East - Innovative Smart Grid Technologies – ME (ISGT) – Saudi Arabia – Jeddah – December 17 – 20, 2011.
20. **M. H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Analysis of Uncertainty Model to Incorporate Wind Penetration in LMP-Based Energy Markets" International Conference on Electric Power and Energy Conversion Systems, American University of Sharjah, UAE – November 15 -17, 2011..
21. **M. H. Ahmed**, K. Bhattacharya, M.M.A. Salama, "Stochastic Analysis of Wind Penetration Impact on Electricity Market Prices" IEEE PES General Meeting 2011 – Michigan, Detroit. July 26 -28, 2011.
22. **M. H. Ahmed**, H.M. Mashaly, A.A. Abaas, M.A. El-Sharkawy,"Impacts of Using Compact Fluorescent Lamp on Power Quality", ICEEC-2004 "International Conference on Electrical, Electronic and Computer Engineering", Faculty of Engineering, Ain Shams University.
23. **M. H. Ahmed**, H.M. Mashaly, A.A. Abaas, M.A. El-Sharkawy, "Experimental Implementation of Harmonics Identification Scheme", MEPCON-2005 "Middle East Power System Conference", Faculty of Engineering, Suez Canal University.
24. **M. H. Ahmed**, H.M. Mashaly, A.A. Abaas, M.A. El-Sharkawy,"Passive and Adaptive Filter Design and Experimental Implementation", MEPCON-2005 "Middle East Power System Conference", Faculty of Engineering, Suez Canal University.

## GRAD STUDENTS

**Former Students:**

- Participated in the supervision of Abdulaziz Almutairi (Master student at University of Waterloo), has finished May 2014. Thesis title "Evaluating Wind Power Generating Capacity Adequacy Using MCMC Time Series Model".
- Participated in the supervision of Nazila Rajaei (Ph.D. student at University of Waterloo), has finished April 2015. Thesis title: "Fault Current Management in Power Systems using Inverter Based Distributed Generators".
- Participated in the supervision of Ameena Saad Al-Sumaiti (Ph.D. student at University of Waterloo), has finished August 2015. Thesis title: "Power Generation Shortage in Developing Countries: Restrictions, Challenges and Proposed Solutions"

**Current Students:**

- Participated in the supervision of Hani Aldhubaib (Ph.D. student at University of Waterloo), started April 2014. Thesis title: "Reliability Analysis of Power Systems Considering the Effect of Weather Variations".
- Participated in the supervision of Abdulaziz Almutairi (Ph.D. student at University of Waterloo), started June 2014. Thesis title: "Reliability Performance of Generation Systems Incorporating Plug-in Electric Vehicles Charging Models".
- Co-supervisor of Ayman Elkasrawy (Ph.D. student at Ryerson University), started January 2014. Thesis title: "An overall framework for Demand Response Implementation by System Operators"
- Co-supervisor of Nitin Padman (Ph.D. student at University of Waterloo), started September 2014.

## AWARDS/FUNDS

- K-Line Insulators/NSERC – Project title: "Smart Insulator Monitoring System (SIMS)", Waterloo, Ontario, Canada, **to be submitted** August 2016, total budget: $240,000. (Role: Co-PI).
- NSERC "Natural Sciences and Engineering Research Council of Canada" – CRD "Collaborative Research and Development Grants" – Project title: "Enabling High Penetration of Distributed Generation and Self-Healing Capabilities of Active Distribution System", Waterloo, Ontario, Canada, **Submitted** July 2016, total budget: $266,400. (Role: Co-PI)
- NSERC Discovery grant NOI (Notification of Intent to Apply) – Project title: "Flexible Operation of Distributed Generation in Electrical Smart Grids (FODGE)", Waterloo, Ontario, Canada, **Submitted** August 2016. (Role: PI).
- IESO (Independent Electricity System Operator) – Project title: "Design of a Demand Response Auction Market for Ontario", Market Department, Mississauga/Waterloo, Ontario, Canada, June 2015- December 2016, total fund: $130,455. (Role: Co-PI). **Awarded**
- Hydro-One Networks Inc. – Project title: "Operation-time Distributed Generation (DG) Connection Impact Assessment", Waterloo, Ontario, Canada, December 2015 – December 2018, total fund: $150,000. (Role: Co-PI). **Awarded**
- IBM, Research and Development Department, First accepted project to The Southern Ontario Smart Computing Innovation Platform (SOSCIP), Project title: "Weather Forecasting Effect in Reliability Evaluation of Electrical Transmission & Distribution Systems", Waterloo, Ontario, Canada, September 2012 – September 2014, total fund: $130,000. ($65,000 per year). (Role: PI "Principle Investigator"). **Awarded**

- Eyedro Green Solutions Inc., MITACS-Enterprise Program, Kitchener, Canada, July 2012 – March 2013, Project title "Load Identification Tool for Residential Appliances", total fund: "15,000" ($7,500 from Eyedro and $7,500 from MITACS). (Role: PI). **Awarded**
- Connect Canada – Proposal entitled "Enabling of a Smart Grid Using GridLAB-D Simulator Applications", Waterloo, Canada, April 2012 – November 2012, total fund: "$20,000" ($10,000 from Hydro-One and $10,000 from Connect Canada). (Role: PI). **Awarded**
- IESO (Independent Electricity System Operator) – Project title: "Variable Generation Modeling and Analysis Tool", Reliability Assessments Department, Mississauga/Waterloo, Ontario, Canada, October 2011- June 2012, total fund: $16,000. (Role: Co-PI). **Awarded**
- MITACS – Accelerate (Hydro-One, Ryerson University, and University of Waterloo), Project: "Decentralized Operation of Smart Distribution Networks based on a Multi-Agent Framework", Centre of Urban Energy (CUE), Toronto, Canada, May 2011 – April 2012, total fund: "$30,000" ($15,000 from Hydro-One and $15,000 from MITACS). (Role: PI). **Awarded**
- Egyptian Sponsorship for Ph.D. Program at University of Waterloo, September 2009 – June 2012. "$113,000".
- ECE Graduate Scholarship (**two times**) "$1000", University of Waterloo, January – August, 2009.
- International Student Award (**three times**) "$3100", University of Waterloo, May 2008 – August 2009.

## INTERNATIONAL RESEARCH COLLABORATION

- Played a major role in the Qatar National Research Fund (QNRF) project, Sixth Project Round (NPR-6), Qatar University and University of Waterloo, project title: "Enabling Self-Healing for Smart Grids with Renewable Energy Resources", total fund: $1,000,000. (Role: Project Manager and Research Collaborator), December 2013 – December 2016.
- Played a major role in the Qatar National Research Fund (QNRF) project, Fifth Project Round (NPR-5), Qatar University and University of Waterloo, project title: "Asset Management for Power Transformers in Smart Grid", total Project Fund: $1,000,000. (Role: Project Manager and Research Collaborator), December 2012 – December 2015

## PROFESSIONAL DEVELOPMENT

- **Certificate in University Teaching (CUT) courses**: Effective Lesson Plans, Research Projects Workshop, Teaching Dossiers Workshop, Course Design, Understanding the Learner, Effective Questioning Strategy, Writing as a Learning Tool, Classroom Communication Strategies, Interactive Teaching, Clickers in the Classroom, Getting Started with D2L, Creating CVs and Cover Letters, Building Rapport With Students, Developing Strong ITA/Supervisor Relationships, Academic Interview.
- **Completion of the Value Added Personnel (VAP) course**, offered by Ontario Centre of Excellence (OCE), courses: Business Development & Entrepreneurship, Strategic & Business Planning, Networking & Communications, Market Strategy
- **MITACS STEP Workshops**: Practice Your Presentations Skills, Proactive Communications, Managing Projects, Business Etiquette, Foundation of Project Management I, Foundation of Project Management II

## EXTRACURRICULAR ACTIVITIES

- **Graduate Student Advisor,** MITACS Global-Link Program, University of Waterloo, Waterloo, Ontario, Canada, May 2010 – August 2012
- **Volunteer,** Shadow Program by International Student Office (ISO), University of Waterloo, Waterloo, Ontario, Canada, September – December, 2000
- **Vice President (Recreational Activities),** Egyptian Student Association (ESA), University of Waterloo, Waterloo, Canada, May 2008 – May 2009.