

Hilal El Misilmani

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Education

American University of Beirut Beirut, Lebanon
Ph.D., Electrical and Computer Engineering (overall GPA 4.00/4.00) Sept. 2012 – May. 2015

- Concentration: Applied Electromagnetics & RF Systems
- Minor: Communications Engineering

Dissertation: *Development of Antennas and Sources for High Power Microwave Applications*
Advisor: Prof. Karim Kabalan

American University of Beirut Beirut, Lebanon
M.E., Electrical and Computer Engineering (overall GPA 4.00/4.00) Sept. 2010 – August. 2012

- Concentration: Applied Electromagnetics & RF Systems
- Minor: Communications Engineering

Thesis: *Compact Circularly Polarized Multi-band Antenna for RFID Applications*
Advisor: Prof. Karim Kabalan

Beirut Arab University Debbieh, Lebanon
B.E., Communications and Electronics Engineering (overall grade: 89.32/100) Sept. 2005 – June 2010
Final Year Project: WiMAX Network Simulation for Beirut Area

Scholarships and Grants

Associated Research Unit Program, National Council for Scientific Research – Lebanon (CNRS-L) 2013 – 2015
National Council for Scientific Research – Lebanon (CNRS-L) Doctoral Scholarship Sept. 2013 – May 2015
Lebanese Association for Scientific Research (LAsER) Scholarship Sept. 2013 – May 2015
Rafic Hariri Foundation Scholarship Sept. 2005 – June 2010
The Association of Specialization and Scientific Guidance (SSG) Scholarship Feb. 2006 – June 2010

Work Experience

1. Teaching Positions

Beirut Arab University (BAU) Debbieh, Lebanon
Assistant Professor, Electrical & Computer Engineering Department (full time) Sept. 2016 – Present
Lecturer, Electrical & Computer Engineering Department (part time) Sept. 2015 – May 2016

Main responsibilities and achievements:

- Assigned as the Graduate studies coordinator for the Faculty of Engineering: 2017 – Present
 - Developed and published the first faculty of engineering graduate catalogue 2019
 - Reviewed and edited the postgraduate bylaws
 - Presented the Faculty of Engineering in the Graduate Studies Open House (*video link*) 2018, 2019, 2021
 - Coordinated with the Dean of Postgraduate Studies
- Assigned as the ABET self-study report editor for the CEE program 2017 – Present
- Developed, introduced, and taught several major and technical elective courses
- Participated in the development of the new four-year CEE curriculum
- Assisted with the recruitment of new lecturers and Professors
- Conducted research, published papers, organized and participated in international conferences
- Founded the Radio Frequency & Antenna Design (RFAD) research team 2018 – Present
 - Initiated research collaboration with other researchers and field experts
 - Supervised, advised, and mentored undergraduate and graduate students
- Organized seminars with established industry professionals (more details in the academic service section)
- Built connections with the industry to find jobs and internship vacancies
- Participated in faculty and departmental meetings and committees (more details in the academic service section)

American University of Beirut

Lecturer, Electrical & Computer Engineering Department (part time)
 Teaching Assistant, Electrical & Computer Engineering Department (part time)

Beirut, Lebanon
 Fall 2015, Fall 2016
 2010 – 2012, 2015

2. Research Positions

American University of Beirut

Postdoctoral Researcher – Electrical & Computer Engineering Department
 Research Assistant – Electrical & Computer Engineering Department

Beirut, Lebanon
 June 2015 – Aug. 2016
 Sept. 2010 – May 2015

- Investigated, designed, and optimized several antenna types
- Conducted research, published papers, organized and participated in international conferences

Beirut Research and Innovation Center

Researcher – Humanitarian Demining Research Program

Beirut, Lebanon
 Sept. 2012 – Aug. 2014

- Conducted research on the implementation of a complete system for the remote neutralization of mines/UXOs
- Wrote and published several journal papers, conference papers, and technical reports
- Assisted in writing proposals to secure funding for research

3. Technical and Consultancy Positions

Issa Holding

Business Development Consultant (full time)

Beirut, Lebanon
 Apr. 2016 – Aug. 2016

- Evaluated the company's sales and maintenance contracts for the period going from 2012 to 2015
- Identified trends, customer needs, and developed business opportunities
- Coordinated with the managing directors of Issa Holding subsidiaries in Lebanon and abroad
- Assisted in the implementation of marketing strategies and company's brochure
- Tracked performance, reported metrics, and met regularly with management and Issa Holding owner

Dar Al-Handasah (Shair and Partners)

Telecommunications Engineer (full time)

Beirut, Lebanon
 Aug. 2011 – Aug. 2012

- Provided expertise and knowledge for the full spectrum design of various low-current and infrastructure telecommunications systems in line with country regulations and customers' aspiration
- Interfaced effectively with other teams, including electrical, mechanical, and architecture, to deliver impactful projects
- Developed specifications, cost estimates, bills of quantities, methods of measurement, concept design reports, and other technical documents to meet established project criteria and applicable standards
- Explored and contributed to new proposal opportunities with a particular focus on the latest telecommunications technologies
- Interacted closely with various disciplines to initiate, run and support projects while preparing disclosure and reporting
- Participated in technical seminars and conferences on emerging platforms, educational talks, and networking events for engineering managers, tech executives, and lead developers to gain insights into the latest innovations

Research Work in Progress

1. Full analytic design procedure of reconfigurable filled-slotted waveguide antennas (in collaboration with BRIC)
2. Design of filled slotted waveguide antennas using machine learning
3. Design of massive MIMO antennas with beamforming using ML for 5G (in collaboration with KFUPM)
4. Design of antennas for breast cancer detection using microwave imaging (in collaboration with AUB)
5. Development of a deep learning pipeline for the detection and localization of breast cancer tumors
6. Design of reconfigurable slotted waveguide antennas using corrugations

University Committees and Academic Service

- ABET self-study report editor for the Communications and Electronics Engineering Program 2017 – Present
- Graduate studies coordinator for the Faculty of Engineering 2017 – Present
- Participated in the HECD WorkReadyNow Virtual Training of Trainers workshop delivered by EDC Dec. 2020

- Participated in the CubeSat Technology: Toward Developing the First Lebanese NanoSatellite workshop at CNRS-L 2019
- Member of the faculty of engineering council 2016 – 2017, 2018 – 2019
- Member of the financial aid committee 2016 – 2019
- Organized a seminar on the Digital transformation in Telco operators: Challenges & Opportunities Mar. 2019
- Member of the course scheduling committee 2016 – 2017
- Member of the job fair committee 2016 – 2017
- Member of the judging committee of BAU Engineering Projects Day 2016 – 2017
- Participated in Urban Health & Wellbeing: Advancing Systems, Science & Technology Workshop Apr. 2017
- Presented the Faculty of Engineering in ERASMUS+ workshop Oct. 2017
- Attended a training workshop entitled "Teaching & Learning: Curriculum Design, Assessment and Feedback", organized by BAU, in collaboration with the University of Roehampton Jan. 2017
- Prepared and organized BAU Open Doors 2016 – 2017
- Assisted in organizing a workshop on how the students can build their CVs and ace their interviews, organized by the Alumni and Career Office in partnership with BLOM Shabeb 2017

Publications

Journal Papers

1. K. Youssef, M. Moussa, M. Al-Husseini, **H. M. El Misilmani**, and K. Y. Kabalan, "Characteristic Mode Solution of Complex-Coefficient Complex-Solution Differential Equations" (Submitted)
2. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure for Planar Slotted Waveguide Antenna Arrays with Controllable Sidelobe Level Ratio for High Power Microwave Applications," Engineering Reports. 2020;e12255. <https://doi.org/10.1002/eng2.12255>
3. **H. M. El Misilmani**, T. Naous, and S. K. Al Khatib, "A Review on the Design and Optimization of Antennas Using Machine Learning Algorithms and Techniques," International Journal of RF and Microwave Computer-Aided Engineering, doi:10.1002/mmce.22356
4. **H. M. El Misilmani**, T. Naous, S. K. A. Khatib and K. Y. Kabalan, "A Survey on Antenna Designs for Breast Cancer Detection Using Microwave Imaging," in IEEE Access, vol. 8, pp. 102570-102594, 2020, doi: 10.1109/ACCESS.2020.2999053
5. A. Damaj, **H. M. El Misilmani**, and S. Abou Chahine, "Miniaturized Dual Band Antennas with Frequency Tunability for Implanted Biomedical Devices", International Journal of Engineering Research and Technology (IJERT), vol. 12, Issue 12, 2019
6. **H. M. El Misilmani**, M. Y. Abou-Shahine, Y. Nasser, and K. Y. Kabalan, "Recent Advances on Radio-Frequency Design in Cognitive Radio," International Journal of Antennas and Propagation, Vol. 2016, Article ID 9878475, 16 pages, 2016. doi:10.1155/2016/9878475.
7. **H. M. El Misilmani**, K. Y. Kabalan, M. Abou Shahine, and M. Al-Husseini, "A Method of Moment Approach in Solving Boundary Value Problems," Journal of Electromagnetic Analysis and Applications, Vol. 7, Issue 3, March 2015
8. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design of Slotted Waveguide Antennas with Low Sidelobes for High Power Microwave Applications," Progress in Electromagnetics Research C, Vol. 56, 15-28, 2015
9. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Improved Vlasov Antenna with Curved Cuts and Optimized Reflector Position and Shape," International Journal of Antennas and Propagations, Vol. 2015, Article ID 193630, 12 pages, 2015
10. **H. M. El Misilmani**, M. Abou Shahine, M. Al-Husseini, and K. Y. Kabalan, "A Simplified Method of Moment (MoM) Approach to solving nth Order Linear Differential Equations," Int. Journal of Scientific & Engineering Research, Vol. 5, Issue 6, June 2014
11. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Compact Circularly Polarized Multi-Band Antennas for RFID Applications," International Journal of Antennas and Propagations, April 2014

Conference Papers

1. S. K. Al Khatib, T. Naous, **H. M. El Misilmani**, and Raed M. Shubair, "Deep Learning for Breast Tumor Detection and Localization from Microwave Imaging Data," (Submitted)

2. **H. M. El Misilmani** and M. Al-Husseini, "1D Slotted Waveguide Antenna with Controlled Beamwidth and Sidelobe Level Ratio," 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Atlanta, GA, USA, 2019, pp. 1421-1422, doi: 10.1109/APUSNCURSINRSM.2019.8888549.
3. **H. M. El Misilmani** and T. Naous, "Machine Learning in Antenna Design: An Overview on Machine Learning Concept and Algorithms," 2019 International Conference on High Performance Computing & Simulation (HPCS), Dublin, Ireland, 2019, pp. 600-607, doi: 10.1109/HPCS48598.2019.9188224.
4. A. Damaj, **H. M. El Misilmani** and S. A. Chahine, "Miniaturized Implantable Coplanar Waveguide Antenna for Biomedical Applications," 2019 International Conference on High Performance Computing & Simulation (HPCS), Dublin, Ireland, 2019, pp. 608-611, doi: 10.1109/HPCS48598.2019.9188130.
5. **H. El Misilmani**, M. Al-Husseini and K. Kabalan, "Design Procedure of Two-Dimensional Circularly Polarized Slotted Waveguide Antenna Arrays," 2018 International Conference on High Performance Computing & Simulation (HPCS), Orleans, 2018, pp. 83-86, doi: 10.1109/HPCS.2018.00028.
6. A. W. Damaj, **H. M. El Misilmani** and S. A. Chahine, "Implantable Antennas for Biomedical Applications: An Overview on Alternative Antenna Design Methods and Challenges," 2018 International Conference on High Performance Computing & Simulation (HPCS), Orleans, 2018, pp. 31-37, doi: 10.1109/HPCS.2018.00019.
7. **H. M. El Misilmani** and A. M. El-Hajj, "Massive MIMO Design for 5G Networks: An Overview on Alternative Antenna Configurations and Channel Model Challenges," 2017 International Conference on High Performance Computing & Simulation (HPCS), Genoa, 2017, pp. 288-294, doi: 10.1109/HPCS.2017.52.
8. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Simple Design Procedure for 2D SWAs with Specified Sidelobe Levels and Inclined Coupling Slots," in the 4th Advanced Electromagnetic Symposium (AES 2016), Spain, July 2016
9. M. Al-Husseini, **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj, and E. Nassar, "Simple Design Method for Dielectric-Filled Low-Sidelobe Slotted Waveguide Antennas," in the 4th Advanced Electromagnetic Symposium (AES 2016), Spain, July 2016
10. **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj and M. Al-Husseini, "Design procedure for 2D slotted waveguide antenna with controllable sidelobe level," 2015 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, Vancouver, BC, 2015, pp. 216-217, doi: 10.1109/APS.2015.7304494
11. M. Al-Husseini, **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj, X. Pan and C. G. Christodoulou, "Controllable-sidelobe slotted waveguide antennas with corrugations for frequency selectivity," 2015 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, Vancouver, BC, 2015, pp. 214-215, doi: 10.1109/APS.2015.7304493
12. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, "Design Procedure for 2D Slotted Waveguide Antenna with Inclined Coupling Slots for Sidelobe Level Control," in the Progress in Electromagnetics Research Symposium (PIERS), Prague, July 2015
13. **H. M. El Misilmani**, K. Y. Kabalan M. Abou Shahine, and M. Al-Husseini, "A Method of Moment Approach in Solving Boundary Value Problems," in the First Irbid International Engineering Conference (IIEC), Jordan, October 2014
14. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Design Procedures for Slotted Waveguide Antennas with Specified Sidelobe Levels," in the High Performance Computing & Simulation Conference (HPCS), Italy, July 2014
15. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Antennas for High Power Microwave Applications," in the Lebanese Association for the Advancement of Science (LAAS), Lebanon, March 2014
16. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Optimized Reflector Position for Vlasov Antennas," in the Progress in Electromagnetics Research Symposium (PIERS), Stockholm, Sweden, August 2013
17. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Vlasov Antenna with Curved Cuts for High Power Microwaves," in the High Performance Computing & Simulation Conference (HPCS), Helsinki, Finland, July 2013
18. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Simple Miniaturized Triple-band Antenna for WLAN/WiMAX Applications," in Progress In Electromagnetics Research Symposium (PIERS), Moscow, Russia, August 2012

Professional Research Experience

Conference Organization

- TPC member of MIC-Electromag 2020 conference Spain, 2020
- Organizer the ACME 2019 special session, part of the HPCS 2019 conference Ireland, 2019
- Organizer the ACME 2018 special session, part of the HPCS 2018 conference France, 2018
- Member of the IPC of ACME 2017 special session, part of HPCS 2017 conference Italy, 2017
- Organizer the 3rd Middle East Conference on Antennas & Propagation (MECAP 2016) Lebanon, 2016
- Secretary of the IEEE AP/MTT/MAG Lebanon Chapter Jan. 2015 – Jan. 2016
- Member of the IEEE Antennas and Propagation Society Since 2013
- Member of the Lebanese Order of Engineers Since 2011
- Member of the Institute of Electrical and Electronic Engineers (IEEE) Since 2006

Reviewer Role

- IEEE Access
- IEEE Sensors Letters
- IET Communications
- Microwave and Optical Technology Letters
- International Journal of Antennas and Propagation
- Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine
- International Journal of Engineering
- Iranian Journal of Electrical and Computer Engineering
- Mosharaka International Conference on Electromag., Micro., Antennas & Propagation (MIC-Electromag 2020)
- The 2019 International Conference on High Performance Computing & Simulation (HPCS 2019)
- The 2018 International Conference on High Performance Computing & Simulation (HPCS 2018)
- The 2017 International Conference on High Performance Computing & Simulation (HPCS 2017)
- The 3rd Middle East Conference on Antennas & Propagation (MECAP)
- The 13th Mediterranean Microwave Symposium (MMS 2013)
- The 20th International Conference on Telecommunications (ICT 2013)
- The 9th International Wireless Communications and Mobile Computing Conference (IWCMC 2013)

Presentations

1. **H. M. El Misilmani** and M. Al-Husseini, “1D Slotted Waveguide Antenna with Controlled Beamwidth and Sidelobe Level Ratio,” oral presentation delivered at the 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Atlanta, Georgia, U.S.A., 7 – 12 July, 2019
2. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, “Design Procedure of Two Dimensional Circularly Polarized Slotted Waveguide Antenna Arrays,” oral presentation delivered at the 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16 – 20, 2018
3. A. Damaj, **H. M. El Misilmani**, and S. Abou Chahine, “Implantable Antennas for Biomedical Applications: An Overview on Alternative Antenna Design Methods and Challenges,” oral presentation delivered at the 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16 – 20, 2018
4. **H. M. El Misilmani** and A. M. El-Hajj, “Massive MIMO Design for 5G Networks: An Overview on Alternative Antenna Configurations and Channel Model Challenges,” oral presentation delivered at the 2017 International Conference on High Performance Computing & Simulation (HPCS 2017), Genoa, Italy, July 17 – July 21, 2017
5. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, “Simple Design Procedure for 2D SWAs with Specified Sidelobe Levels and Inclined Coupling Slots,” oral presentation delivered at the 4th Advanced Electromagnetic Symposium (AES 2016), Spain, July 2016
6. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, “Design Procedure for 2D Slotted Waveguide Antenna with Controllable Sidelobe Level,” oral presentation delivered at the 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Canada, July 2015
7. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, “Design Procedure for 2D Slotted Waveguide Antenna with Inclined Coupling Slots for Sidelobe Level Control,” poster presentation delivered at the Progress in Electromagnetics Research Symposium (PIERS), Prague, July 2015

8. **H. M. El Misilmani**, K. Y. Kabalan M. Abou Shahine, and M. Al-Husseini, "A Method of Moment Approach in Solving Boundary Value Problems," oral presentation delivered at the First Irbid International Engineering Conference (IIEC), Jordan, October 2014
9. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Design Procedures for Slotted Waveguide Antennas with Specified Sidelobe Levels," oral presentation delivered at the High Performance Computing & Simulation Conference (HPCS), Italy, July 2014
10. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Antennas for High Power Microwave Applications," oral presentation delivered at the Lebanese Association for the Advancement of Science (LAAS), Lebanon, March 2014
11. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Optimized Reflector Position for Vlasov Antennas," oral presentation delivered at the Progress in Electromagnetics Research Symposium (PIERS), Stockholm, Sweden, August 2013
12. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "Improved Vlasov Antenna with Curved Cuts for High Power Microwaves," oral presentation delivered at the High Performance Computing & Simulation Conference (HPCS), Helsinki, Finland, July 2013
13. **H. M. El Misilmani**, M. Al-Husseini, K. Y. Kabalan and A. El-Hajj, "A Simple Miniaturized Triple-band Antenna for WLAN/WiMAX Applications," poster presentation delivered at Progress In Electromagnetics Research Symposium (PIERS), Moscow, Russia, August 2012

Additional Certifications

GSM Network Training Certificate, Ogero Telecom	Lebanon, 2010
Common Channel Signaling (SS#7) Network Training Certificate, Ogero Telecom	Lebanon, 2009
Digital Microwave and GSM Network Training Certificate, Ogero Telecom	Lebanon, 2009
Cisco Certified Network Associate (CCNA) Certificate, Cisco Networking Academy	Lebanon, 2009
Digital Satellite Communication Training Certificate, Beirut Media Center	Lebanon, 2008

Skills

Presentation and Reports: LaTeX - Beamer

Online teaching: Microsoft Teams, Zoom

Simulation tools: Ansoft HFSS, CST MWS, ADS, OrCAD PSpice, Multisim, LabVIEW, Matlab & Simulink

RF planning software: TEMS Cell Planner Tool, Atoll simulation tool

Languages: Fluent in English, native Arabic speaker (fluent), with basic knowledge of French

References

Karim Kabalan, Ph.D.

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