

Hilal El Misilmani

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CURRENT POSITION

Beirut Arab University (BAU) Debbieh, Lebanon
Assistant Professor, Electrical & Computer Engineering Department Sept. 2015 – Present
Professional Experience:

- ABET accreditation self-study report editor for the Communications and Electronics Engineering program, attained ABET Accreditation in 2019 Sept. 2017 – Present
- Graduate studies coordinator for the Faculty of Engineering Sept. 2017 – Present
- Founder of the Radio Frequency & Antenna Design (RFAD) research group at BAU Sept. 2018 – Present

EDUCATION

American University of Beirut Beirut, Lebanon
Ph.D., Electrical and Computer Engineering Sept. 2012 – May. 2015
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 Sept. 2010 – June. 2012
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 Sept. 2005 – June 2010

EMPLOYMENT

Beirut Arab University Debbieh, Lebanon
Assistant Professor – Electrical & Computer Engineering Department Sept. 2015 – Present

American University of Beirut Beirut, Lebanon
Research Associate – Electrical & Computer Engineering Department June 2015 – Aug. 2016
Lecturer – Electrical & Computer Engineering Department (Part Time) Fall 2015, 2016

Beirut Research and Innovation Center Beirut, Lebanon
Researcher – Humanitarian Demining Research Program Sept. 2012 – Aug. 2014

Dar Al-Handasah (Shair and Partners) Beirut, Lebanon
Telecommunications Engineer Aug. 2011 – Aug. 2012

GRANTS AND AWARDS

Associated Research Unit Program, National Council for Scientific Research (CNRS-L) – Lebanon 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

PUBLICATIONS

Journals Proceedings

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,” Under Review
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, doi: 10.1002/eng2.12255, in press
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

Conferences Proceedings

1. **H. M. El Misilmani** and M. Al-Husseini, “1D Slotted Waveguide Antenna with Controlled Beamwidth and Sidelobe Level Ratio,” in 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**, and T. Naous, “Machine Learning in Antenna Design: An Overview on Machine Learning Concept and Algorithms,” in the 2019 International Conference on High Performance Computing & Simulation (HPCS 2019), Dublin, Ireland, July 15 – 19, 2019
3. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, “Design Procedure of Two Dimensional Circularly Polarized Slotted Waveguide Antenna Arrays,” in the 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16 – 20, 2018

4. A. Damaj, **H. M. El Misilmani**, and S. Abou Chahine, “Implantable Antennas for Biomedical Applications: An Overview on Alternative Antenna Design Methods and Challenges,” in the 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16 – 20, 2018
5. **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,” in the 2017 International Conference on High Performance Computing & Simulation (HPCS 2017), Genoa, Italy, July 17 – July 21, 2017
6. **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
7. 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
8. **H. M. El Misilmani**, M. Al-Husseini, and K. Y. Kabalan, “Design Procedure for 2D Slotted Waveguide Antenna with Controllable Sidelobe Level,” in the 2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Canada, July 2015
9. M. Al-Husseini, **H. M. El Misilmani**, K. Y. Kabalan, A. El-Hajj, X. Pan, C. Christodoulou, “Controllable-Sidelobe Slotted Waveguide Antennas with Corrugations for Frequency Selectivity,” in the IEEE International Symposium on Antennas and Propagation (APS), Canada, July 2015
10. **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
11. **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
12. **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
13. **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
14. **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
15. **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
16. **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

 TEACHING EXPERIENCE

Beirut Arab University

Sept. 2015 – Present

- Introduced & developed several new courses in the new 4-year communications & electronics eng. curriculum
- Re-designed and taught the following courses in the undergraduate and graduate level:

Electromagnetic Fields and Waves, and Radio Frequency Circuits:

- Undergraduate Level:
 - Electric Circuits 2016 – 2019
 - Propagation and Antennas II 2018 – 2020
 - Advanced Antenna Design Fall 2021
- Graduate Level:
 - Antenna Engineering 2019
 - Wave Propagation Transmission and Advanced Antenna Engineering 2020

Signal Processing and Communications:

- Undergraduate Level:
 - Signals and Systems 2016 – 2020
 - Digital Signal Processing 2015 – 2020
 - Information Theory and Coding 2016 – 2019
 - Transmission and Processing of Digital Signals (Computer Eng. Program) 2015, 2016
 - Discrete-time Signals and Systems (Electric Power & Machines Program) 2020
 - Acoustics 2016 – 2020

General Courses:

- Undergraduate Level: Linear Algebra 2019 – 2020

To access the **teaching evaluation reports** of most of these courses please click *here*

American University of Beirut

Sept. 2010 – 2016

- Undergraduate Level:
 - Analog Signal Processing (lectures) 2015, 2016
 - Communications Laboratory (lab) 2010 – 2012, 2015

 RESEARCH EXPERIENCE

Beirut Arab University

Debbieh, Lebanon

Assistant Professor – Electrical & Computer Engineering Department

Sept. 2015 – Present

- Founded the Radio Frequency & Antenna Design (RFAD) research group. The research activity focuses on the design and optimization of antennas and radio frequency systems for high power microwave applications, biomedical applications, mobile devices, and reconfigurable antennas. The group currently contains: 1 Ph.D. student, 3 master students, and 3 undergraduate students
- Published 4 journal papers, 5 conference papers, and 2 journal papers under review
- Supervised 1 Ph.D. Dissertation, 3 Master Theses, 9 Final Year Projects, and 2 independent study internships
 - PhD dissertation: Implantable Antennas for Biomedical Applications
 - Master theses:
 - * Design of Massive Multiple Input Multiple Output Antenna System for 5G Technology
 - * Filled Slotted Waveguide Antennas
 - * The design of Slotted Waveguide Antennas with Corrugations using Machine Learning
 - Final year projects:
 - * Pattern Reconfigurable Antennas
 - * RFID for Educational Purposes
 - * IoT for Sensing Alarms
 - * Implanted Antennas for Biomedical Applications

- * Cognitive Radio System using Arduino
- * Simple Procedure for Antenna Radiation Pattern Measurement using Arduino
- * Massive MIMO for 5G Technology
- * Reconfigurable Antennas
- * Development of a Signal Intelligence UAV

• Member of the following committees:

- 3 Master thesis defenses
- 3 PhD dissertations defenses

Beirut Research and Innovation Center

Beirut, Lebanon

Researcher – Humanitarian Demining Research Program

Sept. 2012 – Aug. 2014

- Conducted research on the implementation of a complete system for the remote neutralization of mines/UXOs using high power microwave pulses. that includes high power microwave generator and antenna
- Wrote and published several journal papers, conference papers, and technical reports
- Assisted in writing proposals to secure funding for research

American University of Beirut

Beirut, Lebanon

Research Associate – Electrical & Computer Engineering Department

June 2015 – Aug. 2016

- Worked on the design and fabrication of two-dimensional slotted waveguide antenna arrays
- Developed a simple procedure to solve complex-coefficient complex-solution differential equations
- Further enhanced the design of SWA arrays targeting lower side lobe levels and frequency tunability
- Published one journal and two conference papers

Research Assistant – Electrical & Computer Engineering Department

Sept. 2010 – May 2015

- Investigated, designed, and optimized several antenna types
- Published 6 journal papers and 9 conference papers
- Participated in several international and local conferences and workshops

PROFESSIONAL RESEARCH EXPERIENCE

Conference Organization

- TPC member of the Antennas & Wave Propagation (AWP) committee of MIC-Electromag 2020 conf. Spain, 2020
- Organized the ACME 2019 special session, part of the HPCS 2019 conference Ireland, 2019
- Organized 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
- Organized the 3rd Middle East Conference on Antennas & Propagation (MECAP) 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

Paper Reviewing

IEEE Access

Microwave and Optical Technology Letters

International Journal of Antennas and Propagation

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)

RESEARCH WORK IN PROGRESS

- The design of filled slotted waveguide antenna using machine learning
- A review on the advantages and side effects of the use of electromagnetics in medical treatment
- The design of a reconfigurable filled slotted waveguide antenna with low sidelobe levels

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
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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

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
Representative speaker of the Faculty of Engineering in the Graduate Studies Open House (<i>video link</i>)	2018, 2019
Developed and published the first faculty of engineering graduate catalog	2019
Participated in the CubeSat Technology: Toward Developing the First Lebanese NanoSatellite, at the National Council for Scientific Research (CNRS-L)	2019
Built connections with the industry to find jobs and internship vacancies	Since 2018
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 the 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

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

Excellent presentation skills using LaTeX - Beamer
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.

Professor
Electrical and Computer Engineering Department
American University of Beirut
Beirut, Lebanon
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Ziad Osman, Ph.D.

Professor, Chairman
Electrical and Computer Engineering Department
Beirut Arab University
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Mohammed Al-Husseini, Ph.D.

Senior Researcher
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Christos Christodoulou, Ph.D.

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