Osama Alkhateeb, PhD

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Work Experience

The University of Akron, Akron, USA **08/2019 – Present**
Visiting Assistant Professor

- Teaching of lower-level courses, preparation of course materials, conducting examinations, grading, holding office hours.
- One-year experience with online mode of delivery.
- Courses: Basic Electrical Engineering, Tools of Electrical and Computer Engineering Laboratory, Programing for Engineers.

Al- Balqa' Applied University, Salt, Jordan **09/2018 – 05/2019**
Part-time Lecturer

- Teaching of lower-level courses, preparation of course materials, conducting examinations, grading, holding office hours.
- Courses: Electromagnetics and Antenna Theory.

The University of Akron **01/2018 – 05/2018**
Research Volunteer

- Developed an efficient numerical solver for wave propagation in irregular photonic crystals.
- Developed an adaptive stochastic solver for electromagnetic systems that have parametric uncertainty.

The University of Akron **01/2009 – 05/2016**
Research Assistant

- Developed Boundary difference schemes to solve electrostatic and wave scattering problems. Numerical algorithms implementing the method of moments (MoM) and the finite-difference method (FDM) were produced for validation purposes. This project was supported by NSF Award #1216927.
- Developed efficient stochastic solvers based on the arbitrary polynomial chaos (aPC) to characterize electromagnetic and wireless communication systems under uncertainty. These solvers were validated with several examples, such as, radiofrequency (RF) filters with manufacturing imperfections, RF sensors with operational uncertainty, and with lunar radio links.

Teaching Assistant

- Preparation of course materials, partial teaching of lower-level courses, grading papers, proctoring students, conducting discussion sessions and review lectures, holding office hours, and supervision of laboratories.
- Courses: Electric Circuits, and its associated labs, Signals and Systems, Digital Signal Processing, Communication Systems, Programming for Engineers, Electromagnetics, Antenna Theory, Sensors and Actuators.

International Maintenance Technologies, Amman, Jordan **07/2007 - 07/2008**
Application Engineer

• Conducted parametric measurement on motors such as, currents, voltages, temperature, and vibrations.
• Analyzed the obtained readings in time and frequency domains to detect and predict possible of faults in the motors.

Zain, Amman, Jordan **05/2007 - 08/2007**
Intern

• Established point-to-point links for the mobile network by installing microwave radio relays and configuring its associated servers.
• Collaborated in deploying basestation transceiver systems (BTS several locations to expand the network coverage.
• Troubleshooted the problems that may occur in the associated systems.

Education

PhD in Electrical Engineering - 12/2017
The University of Akron, Akron, OH
Dissertation title: "Data-Driven Uncertainty Quantification in Applications of Electromagnetics and Wireless Communication via Arbitrary Polynomial Chaos".

MS in Electrical Engineering - 05/2012
The University of Akron, Akron, OH
Thesis title: "Singularity-Free Boundary Methods for Electrostatics and Wave Scattering".

BA in Electrical Engineering - 08/2007
The University of Jordan, Amman, Jordan
Senior project: implemented autonomous cruise control system in vehicles using PIC microcontrollers, ultrasonic sensors, and infrared sensors.

Technical Skills: MATLAB/SIMULINK, MathCAD, HFSS, CST, Mathematica, Pspice, C, C++, LabView, and MEEP.
Numerical Methods: finite-difference time-domain (FDTD) method, method of moments (MoM), and finite element method (FEM).

Professional Publications

[1] A N M Shahriyar Hossain, Osama J. Alkhateeb, Igor Tsukerman, and Nathan Ida. Finite element analysis of metaguides and metasurfaces for dynamic beam steering.19th Biennial IEEE Conference on Electromagnetic Field Computation, Pisa, Italy, November 2020.

[2] Osama J. Alkhateeb and Nathan Ida. Data-driven arbitrary polynomial chaos for uncertainty quantification in filters. Applied Computational Electromagnetics Society Journal, vol.33, no.9, September 2018.

[3] Shampy Mansha, Osama Alkhateeb, Igor Tsukerman, Chong Yidong. Trefftz-based methods for electromagnetic wave scattering in aperiodic slabs. 11th International Symposium on Electric and Magnetic Fields. Darmstadt, Germany, April 2018.

[4] Osama Alkhateeb and Nathan Ida. Data-driven multi-element arbitrary polynomial chaos for uncertainty quantification in sensors. IEEE Transactions on Magnetics, vol.54, issue.3, pp.1-4, March 2018.

[5] O. Alkhateeb and N. Ida. Uncertainty analysis on band-stop filter using data-driven arbitrary polynomial chaos. In 2017 International Applied Computational Electromagnetics Society Symposium - Italy (ACES), pages 1-2, March 2017.

[6] Igor Tsukerman, Osama AlKhateeb. Fritz Kretzschmar and Sascha Schnepp, Trefftz Approximations: Finite-Difference, Boundary-Difference and Discontinuous Galerkin Schemes. Sixth Conference on Finite Difference Methods: Theory and Applications, Lozenetz, Bulgaria, June 2014

[7] Alkhateeb, O.; Tsukerman, I. A boundary difference method for electromagnetic scattering problems with perfect conductors and corners. IEEE Transactions on Antennas and Propagation, vol.61, no.10, pp.5117-5126, Oct. 2013

[8] Osama Alkhateeb and Igor Tsukerman. Special Difference Schemes for Singularity-Free Boundary Methods. PIERS Proceedings, Progress In Electromagnetics Research Symposium, Taipei, Taiwan, March 2013

References

1- Dr. Nathan Ida, University of Akron,
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2- Dr. Igor Tsukerman, University of Akron,
igor@uakron.edu,
(330) 972 8041

3- Dr. Robert Veillette, University of Akron,
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