



**CURRICULUM VITAE**  
**NIZAR TAYEM, Ph.D.**

Assistant Professor  
Electrical Engineering Program  
Department of Engineering and Technology  
Texas A&M University-Commerce  
Commerce, Texas 75429

**EDUCATION**

**Ph.D., in Electrical Engineering**, Wichita State University, Wichita, KS-US, (2001- 2005)  
GPA: 3.95/4.0

**MS in Physics and Electronics**, Al-Najah National University, Palestine (1996- 1998)

**BS in Physics and Electronics**, Al-Najah National University, Palestine (1991-1995)

**ACADEMIC APPOINTMENTS**

**Assistant Professor**

Electrical Engineering program  
Department of Engineering and Technology  
Texas A&M University-Commerce, TX

**July 2018-Present**

**Chair of Electrical Engineering Department and  
Assistant Professor**

Electrical Engineering department  
Prince Mohammed bin Fahd University  
Al-Khobar, Saudi Arabia

**Jan. 2010 – Jun 2018**

**Visiting Assistant Professor**

Electrical and Computer Engineering  
Miami University, Ohio

**Aug. 2008 - Oct. 2009**

**Faculty of Communication and Electronics Engineering**

ITT Technical Institute  
Electrical and Computer engineering  
Owings Mills, MD, USA

**Sep. 2007 - Aug. 2008**

**Postdoctoral Researcher Follow**

Electrical and Computer Engineering department  
Louisiana State University  
Louisiana, USA

**July 2006 - Aug. 2007**

**Visiting Assistant Professor**

Electrical and Computer Engineering department  
West Virginia University Institute of Technology  
West Virginia, USA

**Oct. 2005 - May 2006****Senior RF Engineer**

Sprint Nextel Communication  
Ft. Lauderdale, Florida, USA

**April 2005 – Oct. 2005****Graduate Research Assistant**

Electrical and Computer Engineering Department  
Wichita State University, Wichita, KS  
Kansas, USA

**Aug. 2001 – Mar. 2005****ADMINISTRATIVE POSITION**

Chair of Electrical Engineering department, Prince Mohammad Bin Fahd University, KSA

**Jan. 2010 – Jun.2018****MAJOR INDUSTRIAL RESEARCH PROJECTS**

- Air Force Research Laboratory Challenge 2021 (TAMUC) (in progress)
- Smart Antenna for Future US Army Frequency-Hopping Communications Systems,” US Army Research under State of Kansas Defense Experimental Program to Simulate Competitive Research (DEPSCoR)
- DOA Estimation scheme for wireless communication, US Army Research Laboratory, USA
- DOA Estimation and Downlink Beam Study for 3GPP,” Samsung Electronics Co., LTD, Information and Telecommunication R&D Center
- Developed algorithms for WCDMA TDD Mode for Samsung Electronics
- Proposed and implemented Unitary Root Music and Unitary Music with real valued Rank Revealing Triangular factorization algorithm for Wright-Patterson Air Force Base, USA
- Real time implementation for Direction of arrival estimation (DOA) Hardware implementation using FPGA for Direction of arrival estimation (DOA) proposed methods
- Developed an algorithm for Time of arrival estimation (TOA)
- Developed and proposed many algorithms in one dimensional and multidimensional array signal processing for parameter estimation

**TEACHING EXPERIENCE**

- Teaching The EE Curriculum that has been developed by Texas International Education Consortium (TIEC)
- More than fifteen years of teaching experience in universities
- Received excellent student evaluation (avg. 4.8/5)
- Taught courses and laboratories in different areas of electrical engineering

<b>Texas A &amp; M University-Commerce</b>	
ENGR 2304 Computing for Engineers	EE 330 Continuous Signals & Systems <b>(with Lab )</b>
EE 220 Circuit Theory (with Lab)	EE 470 Capstone Design /Internship I
EE 310 Digital Sys/Embedded Control <b>(with Lab)</b>	EE 440 Electric Machinery <b>(with Lab)</b>
EE 430 Discrete Signals and Systems	EE 435 Control Systems <b>(with Lab)</b>
EE 433 Digital Signal Processing	
<b>Prince Mohammad bin Fahd University</b>	
EE Senior Design Project I &II	Advanced Applied Mathematics
Wireless Communication systems	Control Systems
Digital Communication Systems( <b>with Lab</b> )	Propability and Random Signal Analysis
Electromagnetic Field and Waves	Electric Circuits I <b>(with Lab)</b>
Digital Signal Processing <b>(with Lab)</b>	Electric Circuit II <b>(with Lab)</b>
Communication System <b>(with Lab)</b>	Electronics I & Electronics II <b>(with Lab)</b>
Digital System <b>(with Lab)</b>	LabVIEW and MATLAB Programming
Sensor and Instrumenation <b>(with Lab)</b>	Signals and Systems
Electric Machinery	Microprocessor and Microcontroller <b>(withLab)</b>
<b>Miami University , OHIO, USA</b>	
Digital switching <b>(with Lab)</b>	Circuit Analysis I <b>(with Lab)</b>
Local Area Network <b>(with Lab)</b>	Circuit II
<b>West Virginia Univvrsity , WEST VIRGINIA, USA</b>	
Introduction to communiucation system <b>(with Lab)</b>	Digital Signal Processing <b>(with Lab)</b>
Electric Circuit I <b>(with Lab)</b>	Circuit II <b>(with Lab)</b>
<b>ITT Technical Instituite , MARYLAND , USA</b>	
Network Standards and Protocols	Electronics I & II <b>(with Lab)</b>
Network Management	Circuits I & II <b>(with Lab)</b>
Electronics Communication system I <b>(with Lab)</b>	Programable logic control
Data and computer Communication <b>(with Lab)</b>	Microprocessor <b>(with Lab)</b>
Electronics Communication System II <b>(with Lab)</b>	Digital Systems <b>(with Lab)</b>

- Supervised more than 30 senior design projects in the areas of Communication System, Electronics, Power System, and Control System
- Teaching senior design project course for more than 8 years

**Samples of senior design projects I supervised:**

- ❖ Chemical Mixer (TAMUC)
- ❖ Autonomous Vehicle Platform (TAMUC)
- ❖ RC Solar Autonomous Car (TAMUC)
- ❖ Child Safety Seat (TAMUC)
- ❖ Obstacle Avoidance & Navigational Autonomous Robot
- ❖ Remote weather station
- ❖ Peer to Peer Communication for Robotics System
- ❖ Performance Analysis and Implementation of Maximal Ratio Combining Using NI PXI System
- ❖ Off Grid On Demand Street Light System
- ❖ Smart Home Monitoring and control
- ❖ Smart Parking System
- ❖ Autonomous Quadcopter
- ❖ Remote Controlled Submarine
- ❖ Power Management System
- ❖ Motor Fault Detection
- ❖ Child Seat Safety System
- ❖ Lifeguard boat
  
- ❖ Wireless Charger

**HARDWARE/SOFTWARE ELECTRICAL ENGINEERING  
LABRATORIES ESTABLISHMENT:**

- Established the following Electrical Engineering laboratories at TAMUC:

LAB NAME
Communication System Lab
Digital Communication Lab
Control System Lab
Electric Machinery Lab
Electric Circuit Lab

- Established the following Electrical Engineering laboratories at PMU:

LAB NAME	LINKS
General purpose Computer Lab	<a href="http://www.pmu.edu.sa/PDF/Viewer.aspx?ID=316">http://www.pmu.edu.sa/PDF/Viewer.aspx?ID=316</a>
Electronics Lab	<a href="http://www.pmu.edu.sa/PDF-HTML/Electronics%20Lab/Electronics_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Electronics%20Lab/Electronics_Lab-1.html</a>
Electric Circuits Lab	<a href="http://www.pmu.edu.sa/PDF-HTML/Electric%20Circuits%20Lab/Electric_Circuits_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Electric%20Circuits%20Lab/Electric_Circuits_Lab-1.html</a>
Process Control Lab	<a href="http://www.pmu.edu.sa/PDF-HTML/Process%20Control%20Lab/Process_Control_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Process%20Control%20Lab/Process_Control_Lab-1.html</a>

Data Acquisition Lab	<a href="http://www.pmu.edu.sa/PDF-HTML/DAQ%20Lab/DAQ_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/DAQ%20Lab/DAQ_Lab-1.html</a>
Automatic Controls Lab	<a href="http://www.pmu.edu.sa/PDF/Viewer.aspx?ID=314">http://www.pmu.edu.sa/PDF/Viewer.aspx?ID=314</a>
Sensors & Instrumentation Labs	<a href="http://www.pmu.edu.sa/PDF-HTML/Sensors%20and%20Instrumentation%20Lab/Sensors%20and%20Instrumentation%20Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Sensors%20and%20Instrumentation%20Lab/Sensors%20and%20Instrumentation%20Lab-1.html</a>
Robotics & Embedded Systems Labs	<a href="http://www.pmu.edu.sa/PDF-HTML/Embedded%20Systems%20and%20Robotics%20Lab/Embedded_Systems_and_Robotics_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Embedded%20Systems%20and%20Robotics%20Lab/Embedded_Systems_and_Robotics_Lab-1.html</a>
Digital Systems and Microprocessors Labs	<a href="http://www.pmu.edu.sa/PDF-HTML/Digital%20Systems%20Lab/Digital_Systems_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Digital%20Systems%20Lab/Digital_Systems_Lab-1.html</a>
Communications & Signal Processing Lab	<a href="http://www.pmu.edu.sa/PDF-HTML/Communications_Lab/Communications_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Communications_Lab/Communications_Lab-1.html</a>
Electrical Machinery Lab	<a href="http://www.pmu.edu.sa/PDF-HTML/Electric%20Machinery%20Lab/Electric_Machinery_Lab-1.html">http://www.pmu.edu.sa/PDF-HTML/Electric%20Machinery%20Lab/Electric_Machinery_Lab-1.html</a>

**Developed the Following Undergraduate Courses and Lab Manuals:**

- Digital Communication System
- Communication System
- Probability and Random Process
- EE Senior Design Project
- Lab Manual for Communication System
- Lab Manual for Sensor and Instrumentations
- Lab Manual for Digital Communication Systems
- Lab Manual for Circuit I

**Developed the following Graduate Courses:**

- EEEN5352 Digital Control Systems (MS)
- EEEN 5321 Digital Communication Systems (MS)
- EEEN 6322 Cellular Communication Networks (MS)
- EEEN 6323 Advance Wireless Communication (MS)
- EEEN 6332 Adaptive Signal Processing (MS)
- EEEE 6333 Information Theory and Coding (MS)

## HARDWARE SKILLS

- National Instruments (NI) compactDAQ
- NI myRIO
- NI CompactRIO Controller
- NI PXIe-5652, PXIe-5601, PXIe-5622, PXIe 7965, LabVIEW, LabVIEW FPGA Module
- Intel, Motorola, and Atmel Microcontrollers
- NI Universal Software Radio Peripheral (USRP)

## COMPUTING SKILLS

- C, MATLAB/ Simulink, Pspice,
- MULTISIM, TINA
- LabVIEW, FPGA
- Operating Systems: Windows
- Microsoft Word, Power Point, Excel, Visio

## **ABET TRAINING AND CERTIFICATES**

- Attended workshop organized by The institute for the Development of Excellence in Assessment Leadership (IDEAL) MD, USA
- Attended Program Assessment Workshop (Oregon, USA)

## **ACCREDITATION (ACHIEVEMENTS)**

- Led and achieved ABET accreditation for Electrical Engineering department for the first time for Texas A & M University under the supervision of the department chair
- Led and achieved ABET accreditation for Electrical Engineering department for the first time for full six years till 2022 (PMU)
- Led the department effort in achieving NCAA institutional accreditation

## **EE PROGRAM ASSESSMENT (ABET ACCREDITATION)**

- Developed a number of assessment tools, rubrics, and surveys for direct and indirect assessment; defined the continuous improvement process for the EE department
- Developed Student Outcome Assessment Report (SOAR) and Continuous Program Improvement Report (CPIR) forms for ABET
- Developed Course Assessment Report (CAR) and LAB assesment report (LAR) forms
- Led the development of Senior Design Project Report Template and other assessment tools to cater to ABET assessment requirements
- Developed Student Outcome Assessment Report (SOAR) form for documenting the assessment of all student outcomes a – k.
- Developed a Continuous Program Improvement Report (CPIR) form for documenting the process of “closing the loop”.
- Led the EE department effort in defining the EE Dept. Goals, Mission, and Program Educational Objectives
- Guided Civil and Mechanical engineering departments in preparing for ABET accreditation

## **SCHOLARSHIPS and AWARDS**

- Outstanding Ph.D. Award in Electrical and Computer Engineering Wichita State University spring 2004.
- Certified LabVIEW Associate Developer (CLAD )

## **WORKSHOPS AND TRAINING COURSES**

- Advance OPNET Modular (OPNET Technology, Bethesda, MD, USA)
- Introduction to OPNET Modular (OPNET Technology, Bethesda, MD, USA)
- Introduction to ACE (OPNET Technology, Bethesda, MD, USA)
- NI myRIO (National Instruments, PMU , Al-Khobar, KSA)
- LabVIEW Core 1 (National Instruments, PMU , Al-Khobar, KSA)
- LabVIEW Core 2 (National Instruments, PMU , Al-Khobar, KSA)
- LabVIEW Core 3 (National Instruments, PMU , Al-Khobar, KSA)

- DATA Acquisition and Signal conditioning (National Instruments, PMU, Al-Khobar, KSA)
- NI ELVIS (National Instrument, PMU, Al-Khobar, KSA)
- NI Multisim (National Instrument, PMU, Al-Khobar, KSA)
- NI Test Stand (National Instrument, PMU, Al-Khobar, KSA)
- Radio Frequency (RF) fundamental (National Instrument, PMU, Al-Khobar, KSA)
- MIMO Systems (National Instrument, King Saudi University, Riyadh, KSA)
- Electrical Machinery Course (LD-didactic, Germany)
- Control Design and Robotics Hands-on training (NI Arabia Academic week 2011, Lebanon)
- LabVIEW FPGA Hands-on training (NI Arabia Academic week 2011, Lebanon)
- VeriStand Hands-on training (NI Arabia Academic week 2011, Lebanon)
- DIAdem Hands-on training (NI Arabia Academic week 2011, Lebanon)
- LabVIEW Hands-on training (NI Arabia Academic week 2011, Lebanon) Professional Activities

## TECHNICAL PRESENTATIONS AND TALKS

- **N. Tayem**, "Capon Root-MUSIC-like Direction of Arrival Estimation Based on Real Data," *2021 IEEE 94th Vehicular Technology Conference (VTC2021-Fall)*, 2021, pp. 1-6, doi: 10.1109/VTC2021-Fall52928.2021.9625275.
- **N. Tayem** "Computationally Efficient Forward/backward Averaged DOA Estimation of Coherent Sources in Pairs," *2021 IEEE 94th Vehicular Technology Conference (VTC2021-Fall)*, 2021, pp. 1-7, doi: 10.1109/VTC2021-Fall52928.2021.9625061
- **Nizar Tayem** "Propagator Rooting Method Direction of Arrival Estimation Based on Real Data," IEEE MILCOM 2021, San Diego, CA, November 28-December 2.
- **Nizar Tayem**, "LDL Decomposition-based Real-time FPGA Implementation of DOA Estimation", Asilomar Conference on Signals, Systems, and Computers, Oct. 28-31, 2018, California, USA.
- **Nizar Tayem**, "Undergraduate Engineering Program Assessment, Evaluation, and Continuous Improvement Process: A Case Study," Engineering Education (E3): Innovations in the Classroom and Beyond" April 2020 (**Virtual Presentation**)
- **N Tayem**, "Quality Assurance of Capstone Senior Design Projects: A Case Study," American Society for Engineering Education (ASEE) Virtual Conference, July 2020 (**Virtual Presentation**)
- Harmonic Estimation Employing QR factorization and Power Spectral Density for fault detection in Induction Motor," Machinery failure Prevention technology 2018, Virginia beach, Virginia
- Teaching Communications Engineering Using NI ELVIS and LabVIEW, NI Week 2016 **Austin**, Texas, August 2016
- Partial Data Matrix DOA Estimation without Eigenvalue Decomposition", International Conference on Digital Signal Processing Kuala Lumpur, Malaysia April 2017
- Real Time Implementation of Direction of Arrival Estimation Schemes using LabVIEW and NI PXI Platform" at King Fahd University for Petroleum and Minerals, March 2015
- Direction of Arrival Estimation Schemes using NI PXI Platform at Prince Sultan Advanced Technologies Research Institute (PSATRI) King Saud University, KSA, November 2014
- Direction of Arrival Estimation Schemes using NI PXI Platform at Advanced Sensors and Electronic Defence (ASED), KACST, KS A 2014
- QR-TLS ESPRIT for Source Localization and Frequency Estimations, IEEE Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2013
- Parallel TSQR-TLS and QR-TLS factorization for Joint Time Delay and Frequency Estimation, IEEE Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2013
- NI Graphical design in Developing RF Direction Finding Application, NI Arabia academic day 2013
- 2 D DOA estimations for multiple coherent sources using a new antenna array configuration," IEEE Military communication conference, Orlando, Florida, November. 2012

- QRC-ESPRIT for Wideband Signals, Second International Conference on Advances in Information and Communication Technologies, Amsterdam, Netherlands, Dec 2011
- Range and Bearing Estimation for Near-Field Sources," IEEE Vehicular Technology Conference Fall, Ottawa, Canada, September 2010
- Propagator Method for Joint Time Delay and Frequency Estimation," IEEE Conference on Signal, System & Computers, Pacific Grove, CA, Oct. 2008.
- Unitary MUSIC algorithm for Source bearing estimation," IEEE Vehicular Technology Conference, Baltimore, MD, October 2007
- Angle of Arrival Estimation for Non-Circular Signals" IEEE Sarnoff Symposium 2006, Princeton, New Jersey, March 2006.
- DOA Estimation for Coherent Sources with Spatial Smoothing without Eigen-decomposition under Unknown Noise Field," IEEE GLOBECOM Conference 2005, St Louis, MO, December 2005.
- 2-D Directional of Arrival Angle Estimation Non-Based on the Eigen Structure Approach, IEEE Vehicular Technology Conference, Los Angeles, CA, September 2004.



- CONJUGATE ESPRIT (C-SPRIT), IEEE Military Communications Conference, Boston, October 2003.

### COMMITTEE WORK (Department, College, University)

- Chair of EE department council
- Chair of College of Engineering ABET Committee
- Chair of EE senior design project committee.
- Chair of EE Teaching and accreditation committee
- Chair of EE Lab committee
- Member of faculty search committee
- Member of graduate research committee.
- Member of the college council
- Member of research and development committee
- Member of University IT committee

### REVIEWER FOR TECHNICAL PAPERS

Reviewer for international journals and conferences including:

- IEEE Transaction of Antenna and Propagation
- IEEE Vehicular Technology Conference
- IEEE Transaction on signal processing
- Signal Processing Journal
- IEEE signal processing Letter and Transactions
- IEEE Antenna and Wireless Propagation letter
- IEEE GLOBECOM Conference
- IEEE Transaction in Wireless Communication
- **General Co-Chair** of International Conference on Technology Innovation – ICTI 2016 at New York, USA

### MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Senior member of institute of Doctors Engineering and Scientists (IDES)
- IEEE member
- Member of World Academy of Science, Engineering, and Technology
- Member of the institute of Electronics, Information, and Communication Engineers
- Editor-in-Chief of International Journal on Electrical and Power Engineering (ACEEE, USA).

## RESEARCH PUBLICATIONS: JOURNALS

1. **N. Tayem**, Ahmed A. Hussain,” FPGA-based Hardware Implementation of Computationally Efficient Multi-Source DOA Estimation Algorithms, Wireless communication Handbook National Instruments, 2020
2. A.A. Hussain, **N. Tayem**, A. Soliman and R. M. Radaydeh, "FPGA-Based Hardware Implementation of Computationally Efficient Multi-Source DOA Estimation Algorithms," in *IEEE Access*, vol. 7, pp. 88845-88858, 2019.
3. Redha Radaydeh, Fawaz Alqahtani, Mohamed-Slim Alouini, and **Nizar Tayem** ,”[Adaptive Spectrum-Shared Association for Controlled Underlay D2D Communication in Cellular Networks](#)” *IET Communications*, Aug 2019  
DOI: 10.1049/iet-com.2019
4. **Nizar Tayem**, K Majeed, AA Hussain, “Propagator Method using PARAFAC Model for Two Dimensional Source Localization” accepted for publication at *Radioengineering Journal* July 2018
5. A. A. Hussain, **N. Tayem**, M. O. Butt, A. Soliman, A. Alhamed and S. Alshebeili, "FPGA Hardware Implementation of DOA Estimation Algorithm Employing LU Decomposition," in *IEEE Access*, vol. 6, pp. 17666-17680, 2018.
6. **Nizar Tayem**, K Majeed, AA Hussain, “Parallel Factor-Based Model for Two-Dimensional Direction Estimation” *International Journal of Antennas and Propagation*, Volume 2017 (2017), Article ID 1813497, 12 pages
7. **Nizar Tayem** “Cholesky Factorization Based Parallel Factor for Azimuth and Elevation Angles Estimation" accepted at *Arabian Journal for Science and Engineering*, June 2017
8. A Alhamed, **Nizar Tayem**, T Alshawi, S Alshebeili, A Alsuwailem, A Hussain, “FPGA-based Real Time Implementation for Direction-of-Arrival Estimation,” *The Journal of Engineering* [10.1049/joe.2017.0165](#) , May 2017
9. **Nizar Tayem**, “Azimuth/Elevation Directional Finding with Automatic Pair Matching” *International Journal of Antennas and Propagation*, Volume 2016 (2016), Article ID 5063450, 9pages
10. **Nizar Tayem**, Syed Raza, Mohammed Omer, Ahmed Abul Hussain, “Joint Frequency and Time Estimation Algorithms" *Arabian Journal for Science and Engineering* September 2016, Volume 41, [Issue 9](#), pp 3511–3519
11. **Nizar Tayem**, Khaqan Majeed, and Ahmed A. Hussain, “Two Dimensional DOA Estimation using Cross-correlation Matrix with L-shaped Array,” *IEEE Antennas and Wireless propagation letters* , October 2015
12. **N. Tayem**, “Real time implementation for DOA estimation methods on NI-PXI platform," *Progress In Electromagnetics Research B*, Vol. 59, 103-121, 2014.
13. M. Omer, **N. Tayem**, A Hussain,” Two Uniform Linear Arrays for Non-Coherent and Coherent Sources for Two Dimensional Source Localization,” *Journal of Progress In Electromagnetics Research Letter* , Vol. 47, 31-39, July 2014.
14. **N. Tayem**, M. Omer, M. El-Lakkis, S. A. Raza , J. Nayfeh,” Hardware Implementation of a Proposed QR-TLS DOA Estimation Method and Music, Esprit Algorithms on NI-PXI

- Platform, Journal of Progress In Electromagnetics Research C, Vol. 45, 203-221, November 2013.
15. **N. Tayem**, M. Omer, H. Gami, S. A. Raza, J. Nayfeh, M. Al-Lakkis, "Joint Frequency and Angle Estimation Algorithms," Journal of Selected Areas in Telecommunications (JSAT), October 2013
  16. M. M. Qasaymeh, **Tayem Nizar**, and Ahmed Musa, "An Efficient Channel Estimator for Frequency Hopping System via Propagator Method", The International Journal of Ubiquitous Systems and Pervasive Networks, Vol. 3, pp.23-27, May 2011.
  17. **Nizar Tayem** and Gami Hiren, "Two Stages Time Delay and Frequency for multiple sinusoids," Journal of Selected areas in Telecommunication (JSAT), pp. 59-63, April 2011.
  18. **Nizar Tayem**, "QRC-ESPRIT method for wideband signals" ACEEE International Journal on communication, Vol.2, No.03, pp.1-5. Nov 2011
  19. **Nizar Tayem** and Gami Hiren, "Two Stages Time Delay and Frequency for multiple sinusoids," Journal of Selected areas in Telecommunication (JSAT), pp. 59-63, April 2011.
  20. Qasaymeh M.M, Gami Hiren, **Tayem Nizar**, Ravi Pendse, and M. E. Sawan "Joint Time Delay and Frequency Estimation with Propagator Method" IEEE Signal Processing Letter March. Vol.16, No. 5, pp.422-425, May 2009.
  21. **Nizar Tayem** and Hyuck M. Kwon, "Reply to Comment on "L-Shape 2-Dimensional Arrival Angle Estimation with Propagator Methods," IEEE Transactions on Antennas & Propagation, Vol. 56, No. 5, pp. 1503-1506, May 2008.
  22. **Nizar Tayem** and Hyuck M. Kwon, "Reply to Comment on "Conjugate ESPRIT (C-SPRIT)," IEEE Transactions on Antennas & Propagation, Vol. 55, No. 2, pp. 512 - 513, February 2007.
  23. **Nizar Tayem** and Hyuck M. Kwon, "Azimuth and Elevation Angle Estimation with No Failure and No Eigen Decomposition," Elsevier Signal Processing Journal, Volume 86, Issue 1, Pages 8-16, January 2006.
  24. **Nizar Tayem** and Hyuck M. Kwon, "L-Shape 2-Dimensional Arrival Angle Estimation with Propagator Method," IEEE Transactions on Antennas and Propagation, Vol. 53, No. 5, pp. 1622-1630, May 2005.
  25. **Nizar Tayem** and Hyuck M. Kwon, "Conjugate ESPRIT (C-SPRIT)," IEEE Transactions on Antennas and Propagation, Vol. 52, No. 10, pp. 2618-2624, October 2004.

## CONFERENCE PUBLICATIONS

1. **Nizar Tayem**, Ahmed A Hussain, Vinay Reddy Veramareddy, and Soliman Abdel-Hamed, "Propagator Rooting Method Direction of Arrival Estimation Based on Real Data," IEEE MILCOM 2021, San Diego, CA, November 28-December 2.
2. **Nizar Tayem**, Srđan Budimir, Vinay Reddy Veramareddy, and Ahmed A Hussain, "Capon Root-MUSIC-like Direction of Arrival Estimation Based on Real Data," 93th IEEE Vehicular Technology Conference, 27 - 30 September 2021.
3. Ahmed A Hussain, **Nizar Tayem**, and Soliman Abdel-Hamed, "Computationally Efficient Forward/backward Averaged DOA Estimation of Coherent Sources in Pairs," 93th IEEE Vehicular Technology Conference, 27 - 30 September 2021.

4. A. A. Hussain, **N. Tayem** and A. -H. Soliman, "FPGA Hardware Implementation of Computationally Efficient DOA Estimation of Coherent Signals," The 2021 IEEE 10th International Conference on Radar, Antenna, Microwave, Electronics and Telecommunications (ICRAMET) , November 23<sup>rd</sup> - 24<sup>th</sup>, 2021
5. **Nizar Tayem**, "QR decomposition and Parallel Factor-based Model for Two-Dimensional Direction of Arrival Angle Estimation", IEEE Asilomar Conference on Signals, Systems, and Computers, November 1-4, 2020, California, USA.
6. Ahmed A. Hussain, **Nizar Tayem**, Jamal Nayfeh, Samir El Nakla," Undergraduate Engineering Program Assessment, Evaluation, and Continuous Improvement Process: A Case Study," Engineering Education (E3): Innovations in the Classroom and Beyond" April 2020
7. Ahmed A Hussain, **N Tayem**, C Yahya, S Alhuwaidi, J Nayfeh," Quality Assurance of Capstone Senior Design Projects: A Case Study," American Society for Engineering Education (ASEE) Virtual Conference, July 2020
8. **N. Tayem**, Nadar Sawalhi, Suri Ganriwala," Harmonic Estimation Employing QR factorization and Power Spectral Density for fault detection in Induction Motor," Machineryfailure Prevention technology 2018, Virginia beach, Virginia
9. Ahmed A. Hussain, **N. Tayem**, Abdel-Hamid Soliman "LDL Decomposition-based Real-time FPGA Implementation of DOA Estimation." Accepted at IEEE Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2018.
10. **N. Tayem**, "Partial Data Matrix DOA Estimation without Eigenvalue Decomposition", International Conference on Digital Signal Processing Kuala Lumpur, Malaysia April 17-19, 2017
11. Nadar Sawalhi, **N. Tayem**, Suri Ganriwala,"Fault detection and health monitoring using motorcurrent signature analysis Compared to Vibration Analysis ," Machinery failure Prevention technology 2018, Virginia beach, Virginia
12. **N. Tayem**, M. Omer, A. Abul Hussain , "DOA Estimation Method using R Matrix of the QR Factorized Data and its Prototype Implementation on NI-PXI Platform," IEEE MILCOM 2014,Baltimore, MD
13. **N. Tayem**, M. Omer, A. Abul Hussain , "Hardware Implementation of MUSIC and ESPRIT onNI-PXI Platform," IEEE MILCOM 2014, Baltimore, MD
14. Syed A. Raza and **Nizar Tayem**, "Direct and Parallel QR Based Subspace Decomposition Methods for System Identification", International Conference on Industrial Automation, Information and Communications Technology, Bali, 28-30th August 2014.
15. **N. Tayem**, M. Omer, H. Gami, Jamal Nayfeh "QR-TLS ESPRIT for Source Localization and Frequency Estimations." IEEE Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2013.
16. **N. Tayem**, M. Omer , S. A. Raza, J. Nayfeh, Mohamed El-Lakkis, " Parallel TSQR-TLS and QR-TLS factorization for Joint Time Delay and Frequency Estimation." IEEE Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2013
17. **Nizar Tayem**, "2 D DOA estimation for multiple coherent sources using a new antenna array configuration," IEEE Military communication conference, Orlando, Florida, November. 2012
18. **Nizar Tayem**, " QRC-ESPRIT for Wideband Signals, Second International Conference on Advances in Information and Communication Technologies, Amsterdam, Netherlands, Dec 2011.
19. **Nizar Tayem** ,Champike attanaayake, and Ayodele Abatan, " Range and Bearing Estimation

- for Near-Field Sources," IEEE Vehicular Technology Conference Fall, Ottawa , Canada, September 2010.
20. Gami H., Qasaymeh M., **Tayem N.**, R. Pendse, M. Sawan, "Efficient Structure-Based Carrier Offset Estimator for OFDM System," IEEE Vehicular Tech. Conf., Barcelona, Spain, Apr 26-29, 2009.
  21. Qasaymeh M., Gami H., **Tayem N.**, R. Pendse, M. Sawan, "Time Delay Estimator for Frequency Hopping System without Eigen Decomposition," IEEE Vehicular Tech Conf, Barcelona, Spain, Apr 26-29, 2009.
  22. Qasaymeh M., Gami H., **Tayem N.**, R. Pendse, M. Sawan, "Rank Revealing QR Factorization for Jointly Time Delay and Frequency Estimation," IEEE Vehicular Tech Conf, Barcelona, Spain, Apr 26-29, 2009.
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Correlated Sources under Unknown Symmetric Toeplitz Noise," IEEE Vehicular Technology Conference 2005-Spring, Stockholm, Sweden, May 30 -June 2, 2005.

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## CO-ADVISOR PH.D. DISSERTATIONS

- Hiren Gami Ph.D., employed at Miami University Middletown, Ohio
- Mahmoud M. Qasaymeh Ph.D., employed at Tafila Technical University, Jordan
- Ahmed Abul Hussain, currently Ph.D. student at Staffordshire University

## RESEARCH CITATIONS

My publications have been **cited 991 times**, according to information on the Google scholar website:  
<https://scholar.google.com/citations?user=R9Z-glOAAAAJ&hl=en>

## INDUSTRIAL CASE STUDIES

National Instruments published my case studies on their website:

- **Nizar Tayem** , Ahmed Abul Hussain, "Real-time Implementation for DOA Estimation Methods on NI-PXI Platform, July 2015, <http://sine.ni.com/cs/app/doc/p/id/cs-17309?nisrc=RSS-pxi-en>
- **Nizar Tayem**, Ahmed Abul Hussain ,Abdel-Hamid Soliman" FPGA Hardware Implementation and Experimental Verification of Direction-of-Arrival Estimation Algorithm Using LU Decomposition, July 2018, <http://sine.ni.com/cs/app/doc/p/id/cs-17700>
- **Nizar Tayem**,"FPGA-Based Real-Time Implementation for Direction of Arrival Estimation Algorithm Using QR Decomposition, October 2017  
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## INTERNATIONAL PATENTS

1. **Nizar Tayem**, Kwon Hyuck, Min Seung Hyun, Kang Dong Hee,: Antenna apparatus for estimating direction of arrival and frequency of arrival and estimating method thereof, using threearray antennas. Samsung Electronics July 2007: KR 1020060000682
2. Kwon Hyuck Moon,**Nizar Tayem**, Min Seung Hyun, Kang Dong Hee,: Method and an

apparatus for estimating a DOA of a coherent source, to obtain a difference between forward/backward spatial smoothing and backward spatial smoothing covariance matrixes. Samsung Electronics September 2008: KR 1020070028560.

## TECHNICAL REPORTS

- **Nizar Tayem**, Raja Balakrishnan, and Hyuck M. Kwon, “Smart Antenna for Future US Army Frequency-Hopping Communications Systems,” US Army – DEPSCoR Final Progress Report, June 7, 2005, 263 pages
- **Nizar Tayem** and Mort Naraghi-Pour, “Unitary Root Music and Unitary Music with real valued Rank Revealing Triangular factorization,” Wright-Patterson Air Force Base, OH 45433-7320, AFRL-RY-WP-TP-2010-1213, June 2010

## RESEARCH FUND:

- **Nizar Tayem (PI)**, 56,750 (SAR).’ Real Time implementation of proposed QR decomposition DOA estimation method on NI-PXI platform and FPGA. Prince Mohammed bin Fahd University.
- **Nizar Tayem (PI)**, 70,000 (SAR).’ Hardware Implementation of Two-Dimensional Azimuth and Elevation Angles Using Dual Polarized Antennas. Prince Mohammed bin Fahd University.
- **Nizar Tayem (PI)**, 70,000 (SAR).’ Wind Turbine Electricity Power System Analysis for Power Quality and Harmonics Estimation Using Signal-Processing Methods. Prince Mohammed bin Fahd University.

## SIGNAL PROCESSING AND COMMUNICATION SYSTEMS RESEARCH LAB

This Lab covers a wide range of topics in Communications such as analog communication systems, digital communication systems, and Wireless and RF communications

Lab Link:

<http://www.pmu.edu.sa/profiles/ntayem/Wireless-Communication-Signal-Processing-Research-Lab.html>

### Projects completed:

- Implemented Proposed Direction of Arrival Estimation (DOA) using NI PXI Platform hardware and LabVIEW software
- FPGA LabVIEW implementation for proposed Novel DOA Algorithms for Mobile communications, radar, and sonar applications
- Simulate and prototype advance wireless and RF communication systems