

Nizar Tayem
Al-Khobar 31952
Kingdom of Saudi Arabia
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Nationality: USA Citizen/Palestinian

Education:

Ph.D., in Electrical and Computer Engineering, **May 2005**
Major: Communications System Minor: Array Signal Processing **GPA: 3.95/4.0**
Wichita State University, Wichita, KS
Thesis Title: **Direction of Arrival Angle Estimation Schemes for Wireless Communication Systems.**
Najah National University,
Master Degree in Physics and Electronics **Oct 1998**
Bachelor of Physics and Electronics **Dec 1995**
Najah National University
Major: Physics Minor: Electronics

Professional Experience:

Assistant Professor **Oct2009-prsent**
Electrical Engineering Department
Prince Mohammad bin Fahd University
Al Khobar, Kingdom of Saudi Arabia
Visiting Assistant Professor **Aug 2008-**
Oct2009
Electrical and computer Engineering
Miami University, Ohio
Part time Faculty at ITT Technical Institute **Jun 2009-Oct 2009**
Electronics and Computer Engineering
Dayton, OH
Faculty of Communication and Electronics Engineering at ITT Technical Institute **Sep2007-Aug2008**
Electrical and Computer engineering
Owings Mills, MD
-Postdoctoral Researcher Follow **Jul 2006-Aug2007**
Electrical and Computer Engineering Department
Louisiana State University
-Visiting Assistant Professor **Oct2005-May2006**
Electrical and Computer Engineering Department
West Virginia University Institute of Technology
-RF Engineering **April2005-Oct2005**
Sprint Nextel communication
-Graduate Research Assistant **Aug 2001 - Mar2005**
Electrical and Computer Engineering Department, Wichita State University, Wichita, KS

- Simulated IS-95 base station modulator and IS-95 rake finger receiver
- Analyzed and simulated time domain equalizations for OFDM broadband wireless access system using MATLAB

- Analyze and study most array signal processing schemes for parameter estimation, MUSIC, ESPRIT, SAGE, Sensor Clean, and propagator method
- Study the channel estimation and modeling for UWB signals
- Worked in projects supported from US Army Research Laboratory and Samsung Corporation
- 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
- Worked for project funded by Samsung corporation for WCDMA TDD mode
- Proposed scheme for one and two dimensional direction of arrival estimation based on ESPRIT algorithm
- Analyzed and studied of different multiple access schemes such as DS/FH CDMA, WCDMA, TDMA, OFDM, CDMA2000, 1x EV-DO, GPRS, IDEN, and GSM
- Analyzed and studied different channel estimation techniques ML, MMSE, LS, RLS and SVD
- CDMA one, CDMA2000, 1x EV-DO, and GSM Optimization
- Extensive research and proposed methods in DOA, TOA, FOA, and TDOA
- Analyzed and studied MUD, MIMO, MIMO-OFDM, and MC-CDMA
- Simulated and studied performance of different error coding techniques under different channel environment
- Proposed an algorithm for adaptive signal processing
- Simulated and studied performance of different error coding techniques under different channel environments such as convolution code, turbo code, and LDPC code
- Extensive study for Smart antenna, SDMA, OFDMA, Beamforming techniques
- Proposed fast communication scheme for parameter estimation not based on eigenanalysis for direction of arrival estimation
- Proposed algorithms include:
- Efficient algorithm for three dimensional estimation frequency, azimuth, and Elevation angles for narrowband signals.
- Efficient forward-backward algorithm for parameter estimation based on largest eigen values and real value decomposition
- Covariance based difference techniques for correlated sources under different noise environments
- Analyze and study in projects supported from US Army Research Laboratory and Samsung Corporation

Teaching Experience

Courses I taught

Oct 2005 -present

- Modern Electronics Communication I
- Modern Electronics Communication II
- Digital Electronics Fundamental I
- Digital Electronics II
- Network Standards and Protocols
- Data and computer communication
- Electronics Devices
- digital communication system
- Microprocessor
- Digital Switching

- Circuit analysis I
- Circuit Analysis II
- Control System
- Electromagnetic theory
- introduction to communication system
- digital signal processing
- Taught at high School courses in physics electricity and electronics

Jun 1997- Oct 2000

Award and Honors:

- Outstanding Ph.D Award in Electrical and Computer Engineering Wichita State University Spring 2004.
 - IEEE Student Member, Member of IEEE Antenna and Propagation Society.
 - Reviewed papers
 - IEEE Globecom Conference
- ICC Conference
 - IEEE Transaction of Antenna and Propagation.
 - IEEE Vehicular Technology Conference
 - IEEE Transaction on signal processing
 - Signal processing journal

Computer Skills

Programming languages: C, C++, Matlab, Actix, Wizard

Software tools: MATLAB, MathCAD, Latex, MS office, Multisim, Opnet, Auotcad Tina, and Labview

Operating Systems: Windows 2000, Windows-NT.

PUBLICATIONS:

Journals Articles

1. M. M. Qasaymeh, Nizar Tayem, Gami Hiren and Musa Ahmed, " An efficient time delay estimator for Frequency Hopping system via Propagator Method" accepted for publication at Far East Journal of Electronics and Communications.
2. 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.
3. 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.
4. 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.
5. 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.

6. 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.

IEEE Conferences Publication

7. 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.
8. 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.
9. 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.
10. Gami H., Qasaymeh M., Tayem N., R. Pendse, M. Sawan, "Subspace-Based Blind CFO Estimation for OFDM by Exploiting Used Carriers," *IEEE Sarnoff Sym.*, Princeton, NJ, Mar 30-Apr 1, 2009.
11. Shatnawi H., Gami H., Qasaymeh M., Tayem N., M. Sawan, R. Pendse, "High Resolution Joint Time Delay and Frequency Estimation," *IEEE Sarnoff Sym.*, Princeton, NJ, Mar 30-Apr 1, 2009.
12. Gami H., Qasaymeh M., Tayem N., R. Pendse, M. Sawan, "Semiblind Multiuser MIMO Channel Estimators using PM and RRQR methods," *IEEE Conf on Comm. Network & Services Research*, New Brunswick, Canada, May 11-15, 2009.
13. Gami H., Qasaymeh M., Tayem N., R. Pendse, M. Sawan, "Carrier Frequency Offset Estimator for Multicarrier Systems using Matrix Pencil Method", *IEEE International conf. on Telecommunications*, Marrakech, Morocco, May 25-27, 2009.
14. Qasaymeh M.M, Gami Hiren, Tayem Nizar, Ravi Pendse, and M. E. Sawan "Joint Time Delay and Frequency Estimation without Eigen-Decomposition" accepted in 42nd Annual Asilomar Conf. Signals, Systems Computers, Pacific Grove, CA Oct. 2008
15. Kareem Al Jabr, Hyuck M. Kwon, and Nizar Tayem, "Modified UCA-ESPRIT for Estimating DOA of Coherent Signals Using One Snapshot," *IEEE Vehicular Technology Conference*, Marina Bay, Singapore, 11-14 May 2008
16. Qasaymeh M., Gami H., Tayem N., M. Sawan, R. Pendse, "Propagator Method for Joint Time Delay and Frequency Estimation," *IEEE Conference on Signal, System & Computers*, Pacific Grove, CA, Oct. 2008.

17. N. Tayem and M. Naraghi-Pour, "Unitary MUSIC algorithm for Source bearing estimation," IEEE Vehicular Technology Conference, Baltimore, MD, 30 September 3 October 2007
18. N. Tayem and M. Naraghi-Pour, "Unitary MUSIC algorithm for Source bearing estimation," IEEE Vehicular Technology Conference, Baltimore, MD, 30 September 3 October 2007
19. N. Tayem and M. Naraghi-Pour, "Propagator Method and Triangular Factorization for Source Bearing Estimation," accepted at IEEE Military Communications Conference, Orlando, Florida, October 29-31 2007.
20. N. Tayem and M. Naraghi-Pour, "Fast algorithm for source localization in multipath environments," SPIE (The International Society for Optical Engineering) April 2007.
21. Tayem and M. Naraghi-Pour, "Unitary Root MUSIC and Unitary MUSIC with Real-Valued Rank Revealing Triangular Factorization," accepted at IEEE Military Communications Conference, Orlando, Florida, October 29-31 2007
22. A. Salameh and N. Tayem, "Conjugate MUSIC for non-circular signals" IEEE International Conference on Acoustics, Speech and Signal Processing 2006, Toulouse, France 14-19 May 2006.
23. Nizar Tayem, A. Salameh, and Hyuck M. Kwon, "Toeplitz based matrix Pencil for Non-Circular Signals" IEEE Vehicular Technology Conference 2006, Montréal, Canada, 25 – 28 September 2006.
24. Nizar Tayem and Hyuck M. Kwon, "Covariance Matrix Differencing for Coherent Sources DOA Estimation under Unknown Noise Field " IEEE Vehicular Technology Conference 2006, Montréal, Canada, 25 – 28 September 2006.
25. N. Tayem and A. Salameh, "DOA Estimation for non-circular sources under correlated noise field," ICT 13th International Conference on Telecommunications 2006, Funchal, Madeira Island, Portugal, 9-12 May 2006.
26. A. Salameh and N. Tayem, "Angle of Arrival Estimation for Non-Circular Signals" IEEE Sarnoff Symposium 2006, Princeton, New Jersey, 27-28 March 2006.
27. Nizar Tayem and Hyuck M. Kwon, Seunghyun Min and Donghee Kang, "Root MUSIC Transform Covariance Differencing for Correlated Sources under Unknown Symmetric Toeplitz Noise," International ITG - IEEE Workshop on Smart Antennas 2006, Reisingburg near Ulm, 13-14 March 2006.
28. A. Salameh, Nizar Tayem, and Hyuck M. Kwon, "Improved 2-D Root MUSIC for Non-Circular Signals" Fourth IEEE Workshop on sensor array and multi-channel processing 2006, Waltham, Massachusetts, 12-14 July 2006.
29. Nizar Tayem and Hyuck M. Kwon, and Yong H. Lee, "DOA Estimation for Coherent Sources with Spatial Smoothing without Eigendecomposition under Unknown Noise

Field," IEEE GLOBECOM Conference 2005, St Louis, MO, November 28-December 2, 2005.

30. Nizar Tayem and Hyuck M. Kwon, "Transform Covariance Differencing Method for Correlated Sources under Unknown Symmetric Toeplitz Noise," IEEE Military Communications Conference, Atlantic City, New Jersey, October 17-20, 2005.
31. Nizar Tayem, Hyuck M. Kwon, and Yong H. Lee, "2-D DOA Estimation with No Failure," IEEE Vehicular Technology Conference 2005 Fall, Dallas, TX, September 25-28, 2005.
32. Nizar Tayem and Hyuck M. Kwon, Seunghyun Min and Donghee Kang, "FOA and 2-D DOA Estimation with Propagator Method," IEEE Vehicular Technology Conference 2005 Fall, Dallas, TX, September 25-28, 2005.
33. Nizar Tayem, Hyuck M. Kwon, "Arrival Angle Estimation of Correlated Sources with Unknown, Spatially Uncorrelated and Nonstationary Noise," IEEE AP-S International Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting, paper number 2583, Washington, DC, USA on July 3-8, 2005.
34. Nizar Tayem, Hyuck M. Kwon, "Arrival Angle Estimation of Correlated Sources under Unknown Noise of Hermitian Covariance Matrix," IEEE AP-S International Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting, paper number 2905, Washington, DC, USA on July 3-8, 2005.
35. Nizar Tayem and Hyuck M. Kwon, "Angle Estimation with Propagator Method for Correlated Sources under Unknown Symmetric Toeplitz Noise," The 18th Annual Canadian Conference on Electrical and Computer Engineering (CCECE05), Session TM22 Digital Signal Processing 3, Saskatoon Inn Saskatoon, Saskatchewan, Canada, May 1-4, 2005.
36. Nizar Tayem and Hyuck M. Kwon, "2-D DOA Estimation with Propagator Method for Correlated Sources under Unknown Symmetric Toeplitz Noise," IEEE Vehicular Technology Conference 2005-Spring, Stockholm, Sweden, May 30 -June 2, 2005.
37. Nizar Tayem and Hyuck M. Kwon, "L-Shape 2-Dimensional Arrival Angle Estimation with Propagator Method," IEEE Vehicular Technology Conference 2005-Spring, Stockholm, Sweden, May 30 - June 2, 2005.
38. Nizar Tayem and Hyuck M. Kwon, "2-D Directional of Arrival Angle Estimation Non-Based on the Eigen Structure Approach," IEEE Vehicular Technology Conference 2004-Fall, Los Angeles, CA, September 26-29, 2004.
39. Nizar Tayem and Hyuck M. Kwon, "CONJUGATE ESPRIT (C-SPRIT)," IEEE Military Communications Conference, Boston, MA, pp. 1155 - 1160, Vol. 2, October 13-16, 2003.

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

References

Reference 1:

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Reference 2

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Reference 3:

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