

“FACULTY PROFILE”

INTRODUCTION

Dr. Amit Kumar Kohli (Associate Professor)

B.Tech. (Honors), M.E. (Gold Medalist), Ph.D. (IIT)

Faculty, Signal Processing and Communication Systems

Electronics & Communication Engineering Department, Room No.- B206

Thapar Institute of Engineering & Technology (TIET, Deemed University),

Patiala – 147004, Punjab, India

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RESEARCH AREAS

- *. **Advanced Wireless Communication Systems & Advanced Wireline Communication Systems**
- *. **Adaptive & Statistical Signal Processing**
- *. **Multirate Signal Processing & Filter Design Techniques**
- *. **Bio-Medical Engineering & Bio-Signal Processing**
- *. **Neural Networks & Neural Signal Processing**
- *. **Audio & Speech Signal Processing**

SLOTS AVAILABLE FOR PH.D. RESEARCH CANDIDATES

Five

SUBJECTS TAUGHT

Advanced Communication Systems; Digital Communication Systems; Analog Communication Systems; Wireless Communication Systems; Fiber Optic Communication; Data Communication; Information and Communication Theory; Random Variables and Stochastic Processes; Signals and Systems; Digital Signal Processing; Audio and Speech Processing; Neural Signal Processing; Soft Computing Techniques; Electronic Engineering; Linear Integrated Circuit Applications;

QUALIFICATION

2002 – 2006 Ph.D. – Electronics and Communication Engineering

with MHRD Fellowship

Department of Electronics and Computer Engineering,

Indian Institute of Technology Roorkee, Roorkee-247667, Uttaranchal, India

Dissertation Topic:– Adaptive Decision Feedback Techniques for Multiuser Detection in CDMA Systems

- 2000 – 2002** M.E. – Electronics and Communication Engineering
with Honors, GATE Fellowship and Gold Medal
Department of Electronics and Communication Engineering,
Thapar Institute of Engineering & Technology, Patiala-147004, Punjab, India
Dissertation Topic:– Linearly Constrained Minimum Variance Beamforming using Modified Variable Step Size Least Mean Square Adaptive Algorithm
Minor Project:– PC based Real-Time Control System using Fiber Optics
Major Project:– Simulation of LMS Algorithm and Study of Basic Adaptive Algorithms
- 1996 – 2000** B.Tech. – Electronics and Communication Engineering
with Honors and University Merit Certificate
Department of Electronics and Communication Engineering,
Guru Nanak Dev Engineering College, Ludhiana, Punjab, India.
(Previously Affiliated to PU, CHD)
Minor Project:– FM Transmitter/Receiver: Design and Fabrication
Major Project:– Satellite Receiver: Design and Fabrication
- 1995 – 1996** Senior Secondary, Punjab School Education Board
with Distinction and State Scholarship
- 1994 – 1995** Matriculation, Punjab School Education Board
with Distinction and National Scholarship

WORK EXPERIENCE

- *. **Associate Professor (AGP 10000)**, ECED, Thapar Institute of Engineering & Technology (TIET, Deemed University), Patiala, 01–07–2014 to Till date
- *. Assistant Professor, ECED, TIET, Patiala, 19–05–2006 to 30–06–2014
- *. Teaching Assistantship at Indian Institute of Technology Roorkee, India, 2002–2006
- *. Teaching Assistantship at TIET, Patiala, Punjab, India, 2000–2002
- *. Five Weeks Training at Texla T.V., Ludhiana, Punjab, India, 1999
- *. Five Weeks Training in Digital System Design at C.E.D.T.I., Mohali, Punjab, India, 1998

SELECTED JOURNAL & TRANSACTION PUBLICATIONS

1. Amit Kumar Kohli and D.S. Kapoor, “BER performance of SFBC-OFDM systems working over fading channels under impulsive environment,” *Springer, Arabian Journal of Science and Engineering*, Published Online – 2020.
2. D.S. Kapoor and Amit Kumar Kohli, “Intelligence-based Channel Equalization for 4x1 SFBC-OFDM Receiver,” *TSI Press, Intelligent Automation and Soft Computing*, Published Online –

2019.

3. Amit Kumar Kohli and G.S. Lamba, "Impact of phase noise on single-tap equalization for fast-OFDM signals under generic linear fading channels," *Elsevier, International Journal of Light and Elect. Optics*, vol. 169, no. , pp. 382-391, September 2018.
4. D.S. Kapoor and Amit Kumar Kohli, "Channel estimation and long-range prediction of fast fading channels for adaptive OFDM system," *Taylor & Francis, International Journal of Electronics*, vol.105, no.9, pp. 1451-1466, April 2018.
5. Amit Kumar Kohli and S. Garg, "High-rate STBC communication system using imperfect CSI under time-selective flat-fading environment," *Springer, Wireless Personal Communications*, vol. 99, no. 3, pp. 1231 – 1245, April 2018.
6. H. Garg and Amit Kumar Kohli, "Excision of ocular artifacts from EEG using NVFF-RLS adaptive algorithm," *Springer, Circuits, Systems and Signal Processing*, vol. 36, no. 01, pp. 404 – 419, January 2017.
7. R. Ratan, Poonam G. Kohli, S.K. Sharma, and Amit Kumar Kohli, "Un-supervised segmentation and quantisation of malignancy from breast MRI images," *J. Natn. Sci. Foundation Sri Lanka*, vol. 44, no. 4, pp. 437-442, December 2016.
8. R. Garg and Amit Kumar Kohli, "Parameter estimation and tracking of sinusoid using variable-step-size LMS algorithms," *Elsevier, International Journal of Light and Elect. Optics*, vol. 127, no. 22, pp. 10953-10960, November 2016.
9. S. Sehrawat and Amit Kumar Kohli, "Optimized mitigation of impulsive noise in OFDM system using CSI," *Elsevier, International Journal of Light and Elect. Optics*, vol. 127, no. 20, pp. 9627-9634, October 2016.
10. Amit Kumar Kohli and D.S. Kapoor, "Adaptive filtering techniques using cyclic prefix in OFDM systems for multipath fading channel prediction," *Springer, Circuits, Systems and Signal Processing*, vol. 35, no. 10, pp. 3595 – 3618, October 2016.
11. K. Singh, D.S. Kapoor, A. Sharma, and Amit Kumar Kohli, "Multi-level threshold based edge detector using logical operations," *J. Natn. Sci. Foundation Sri Lanka*, vol. 44, no. 2, pp. 145-154, June 2016.
12. D. Batra, S. Sharma, and Amit Kumar Kohli, "A novel design and performance analysis of high gain dual band dielectric resonator antenna mounted with horn," *Springer, Wireless Personal Communications*, vol. 88, no. 2, pp. 241 – 254, May 2016.
13. A. Bansal and Amit Kumar Kohli, "Suppression of impulsive noise in OFDM system using imperfect channel state information," *Elsevier, International Journal of Light and Elect. Optics*, vol. 127, no. 4, pp. 2111-2115, February 2016.

14. D.S. Kapoor and Amit Kumar Kohli, "Simulation of basis expansion model for channel fading using AR1 process," *Springer, Wireless Personal Communications*, vol. 85, no. 3, pp. 791-798, December 2015.
15. H. Garg and Amit Kumar Kohli, "EEG spike detection technique using output correlation method - A Kalman filtering approach," *Springer, Circuits, Systems and Signal Processing*, vol. 34, no.08, pp. 2643 – 2665, August 2015.
16. A. Rai and Amit Kumar Kohli, "Volterra filtering scheme using generalized variable step-size NLMS algorithm for nonlinear acoustic echo cancellation," *Acta Acustica United with Acustica*, vol. 101, no. 4, pp. 821 - 828, July/August 2015.
17. A. Rai and Amit Kumar Kohli, "Adaptive polynomial filtering using generalized variable step-size least mean pth power (LMP) algorithm," *Springer, Circuits, Systems and Signal Processing*, vol. 33, no.12, pp. 3931 – 3947, December 2014.
18. S. Singh and Amit Kumar Kohli, "Wireless fading paradigm for antenna array receiver for a disk-type cluster of scatterers," *Springer, Circuits, Systems and Signal Processing*, vol. 33, no. 4, pp. 1231 – 1244, April 2014.
19. R. Ratan, S. Sharma, and Amit Kumar Kohli, "Cubic Lagrange polynomial based designing of efficient interpolators," *Taylor & Francis, International Journal of Electronics Letters*, vol. 2, no. 1, pp. 8 – 16, February 2014.
20. R. Ratan, S. Sharma, and Amit Kumar Kohli, "Performance comparison of quadrature amplitude modulation (QAM) based single and double stage digital interpolators," *Taylor & Francis, International Journal of Electronics*, vol. 100, no. 12, pp. 1724 – 1734, December 2013.
21. D.S. Kapoor and Amit Kumar Kohli, "Gain adapted optimum mixture estimation scheme for single channel speech separation," *Springer, Circuits, Systems and Signal Processing*, vol. 32, no. 5, pp. 2335 – 2351, October 2013.
22. R. Ratan, S. Sharma, and Amit Kumar Kohli, "Designing of Farrow structure based interpolators on nanometer based FPGA technology," *Journal of Computational and Theoretical Nano-sciences (CTN)*, vol. 10, no. 9, pp. 2248 – 2259, September 2013.
23. B. Kaushik, N. Kaur, and Amit Kumar Kohli, "Achieving maximum reliability in fault tolerant network design for variable networks," *Elsevier, Applied Soft Computing*, vol. 13, no. 7, pp. 3211 – 3224, July 2013.
24. H. Garg and Amit Kumar Kohli, "Nonstationary-Epileptic-spike detection algorithm in EEG signal using SNEOs," *Springer, Biomedical Engineering Letters*, vol. 3, no. 2, pp. 80 – 86, June 2013.
25. R. Ratan, S. Sharma, and Amit Kumar Kohli, "Effect of compensation and arbitrary sampling in interpolators for different wireless standards on FPGA platform," *Maxwell, Research Journal of*

Sciences, Engineering and Technology, vol. 6, no. 4, pp. 609 – 621, June 2013.

26. Amit Kumar Kohli and A. Rai, “Numeric variable forgetting factor RLS algorithm for second-order Volterra filtering,” *Springer, Circuits, Systems and Signal Processing*, vol. 32, no. 1, pp. 223 – 232, February 2013.
27. R. Ratan, S. Sharma, and Amit Kumar Kohli, “Performance comparison of QPSK based single and double stage digital interpolators,” *Acta Physica Polonica A*, vol. 123, no. 2, pp. 196 –198, 2013.
28. R. Ratan, S. Sharma, and Amit Kumar Kohli, “Efficient implementation of multistage digital interpolators using half band filters,” *Acta Physica Polonica A*, vol. 123, no. 2, pp. 199 – 201, 2013.
29. A. Agarwal, R. Kumar, Amit Kumar Kohli, and R. Dwivedi, “Performance comparison of PCA and ICA pre-processors in identification of individual gases using response of a poorly selective solid-state sensor array,” *Sensors and Transducers Journals*, vol. 145, No. 10, pp. 191 – 202, October 2012. (ISSN 1726-5479)
30. A. Grover, D.S. Kapoor, and Amit Kumar Kohli, “Characterization of impulse noise effects on space-time block-coded orthogonal frequency division multiplexing (OFDM) signal reception,” *International Journal of Physical Sciences*, vol. 7. No. 25, pp. 4003 – 4011, June 2012.
31. A. Grover and Amit Kumar Kohli, “Full-diversity high-rate space-time block-coded systems using estimated channel state information for symbol detection,” *International Journal of Physical Sciences*, vol. 7. No. 17, pp. 2539 – 2548, April 2012.
32. D. Batra, S.K. Sharma, and Amit Kumar Kohli, “Dual-band dielectric resonator antenna for C and X band applications,” *Hindawi, International Journal of Antennas and Propagation*, vol. 2012, pp. 7, April 2012. (Article ID 914201, doi:10.1155/2012/914201)
33. A. Grover and Amit Kumar Kohli, “Space-time block-coded systems using numeric variable forgetting factor least squares channel estimator,” *International Journal of Physical Sciences*, vol. 6, pp. 7361 – 7370, December 2011.
34. Amit Kumar Kohli, “Fading model for antenna array receiver for a ring-type cluster of scatterers,” *Taylor & Francis, International Journal of Electronics*, vol. 98, no. 7, pp. 933– 940, July 2011. (ISSN 1362-3060)
35. R.R. Arora, Amit Kumar Kohli, and S.K. Sharma, “Performance evaluation of multirate filters for digital down converters,” *International Journal of Physical Sciences*, vol. 6, pp. 2807 – 2817, June 2011.
36. Amit Kumar Kohli, A. Rai, and M.K. Patel, “Variable forgetting factor LS algorithm for polynomial channel model,” *ISRN Signal Processing*, vol. 2011, pp. 1 – 4, January 2011. (Article ID 915259, doi:10.5402/2011/915259)
37. Amit Kumar Kohli and D.K. Mehra, “Adaptive DFE multiuser receiver for CDMA systems using

- two-step LMS-type algorithm – An equalization approach,” *Springer, Wireless Personal Communications*, vol. 54, no. 3, pp. 543 – 558, August 2010.
38. Poonam G. Kohli, B.K. Randhawa, K.D. Singh, G.S. Randhawa, and Amit Kumar Kohli, “Relationship between CCT and IOP in Punjabi population,” *Taylor & Francis, Journal of Medical Engineering & Technology*, vol. 34, no. 1, pp. 1 – 6, January 2010.
39. D. Batra, S.K. Sharma, and Amit Kumar Kohli, “Improved parameter estimation for first-order Markov process,” *Hindawi, Research Letters in Signal Processing, Journal of Electrical and Computer Engineering*, vol.2009, pp. 2, July 2009. (Article ID 186250, doi:10.1155/2009/186250)
40. Amit Kumar Kohli and D.K. Mehra, “Adaptive multiuser channel estimator using reduced Kalman/LMS algorithm,” *Springer, Wireless Personal Communications*, vol. 46, no. 4, pp. 507 – 521, September 2008.
41. Amit Kumar Kohli and D.K. Mehra, “Adaptive multiuser decision feedback detector – A novel parallel interference canceller,” *Springer, Wireless Personal Communications*, vol. 44, no. 4, pp. 361 – 370, March 2008.
42. Amit Kumar Kohli and D.K. Mehra, “A two-stage MMSE multiuser decision feedback detector using successive/parallel interference cancellation,” *Elsevier, Digital Signal Processing*, vol. 17, no. 6, pp. 1007 – 1018, November 2007.
43. Amit Kumar Kohli and D.K. Mehra, “New results for probability of error performance in MMSE multiuser detection for CDMA,” *Elsevier, Digital Signal Processing*, vol. 17, no. 1, pp. 297 – 310, January 2007.
44. Amit Kumar Kohli and D.K. Mehra, “Tracking of time-varying channels using two-step LMS-type adaptive algorithm,” *IEEE Trans. Signal Processing*, vol. 54, no. 7, pp. 2606 – 2615, July 2006.
45. Amit Kumar Kohli and D.K. Mehra, “Adaptive MMSE feedback equalizer for asynchronous CDMA with erasure algorithm,” *Elsevier, Digital Signal Processing*, vol. 15, no. 6, pp. 621 – 630, November 2005.
46. Amit Kumar Kohli and R.S. Saxena, “Linearly constrained minimum variance beamforming using modified variable step size least mean square adaptive algorithm,” *Taylor & Francis, IETE Journal of Research*, vol. 49, no. 4, pp. 259 – 267, July – August 2003.

NUMBER OF PUBLICATIONS IN JOURNALS & TRANSACTIONS:-

Sixty Seven Published + Accepted

NUMBER OF PUBLICATIONS IN CONFERENCES:-

Ten Published + Accepted

WEB PAGE LINKS:-

<https://scholar.google.co.in/citations?user=zlb1cGUAAAAAJ&hl=en>

(Google Scholar)

<https://www.linkedin.com/in/dr-amit-kumar-kohli-b5818723/?ppe=1>

(Linkedin Webpage)

<https://www.facebook.com/drkohli28478>

(Facebook Webpage)

WORKSHOPS & COURSES ATTENDED

- *. “CAPSL Foundation Program: ‘New - Directions’ in Teaching & Learning - Special Purpose Certificate in Academic Practice (SPCert)” by Trinity College, Dublin, Ireland, 2016
- *. “How to Start Export Business,” Indian Institute of Foreign Trade, TIET, 7 – 11, April 2009
- *. “Advanced Signal Processing Techniques in Wireless Communication,” UGC, TIET, 4–23, Dec.2006
- *. “Workshop on Communication Technologies,” IEEE, IITR, 1 – 3, March 2006
- *. “Workshop on Broad Band Technologies,” ALCATEL, IITR, 8 – 9, December 2005
- *. “Course Entitled - Swift India,” NIIT, August 1999

EXPERT TALKS & GUEST LECTURES

- *. “On Relationship between Adaptive Polynomial Filtering and ANN used for the Study of Physiological System,” MVN University, Haryana, India, 2019
- *. “Intelligence-based STBC/SFBC-OFDM Communication Systems for 5G,” MVN University, Haryana, India, 2018
- *. “An overview of Signal Processing and Its Applications in various emerging fields,” I.E.T., Bhaddal, Ropar, Punjab, India, 28th August, 2007

ADMINISTRATIVE & OTHER ACTIVITIES

- *. Student-Mentorship-Coordinator-ECE & ENC, ECED, TIET, Patiala, 22-04-2019 to Till Date
- *. Member of “Deptt. Academic Affairs Committee / SUGC / SPGC”, ECED, 01-09-16 to 31-08-2018
- *. Member of “DPPC-ECED”, 01-07-2015 to 30-06-2018
- *. Active participant in the NBA, NAAC & ABET accreditations, also during Trinity College, Dublin, Ireland, AICTE and UGC visits at TIET, Patiala, Punjab, India. In advisory board of other Institutes for NBA accreditation
- *. P.G. Coordinator, ECED, 15-10-2014 to 03-08-2016, TIET, Patiala
- *. Member of “BOARD OF GOVERNORS”, 01-01-13 to 30-06-14, TIET, Patiala
- *. Member of “STAFF AFFAIRS COMMITTEE”, 01-01-13 to 30-06-14, TIET, Patiala
- *. Associate Editor, Bioinfo, Journal of Artificial Intelligence, 2011-12
- *. Member of “SENATE” TIET, Patiala, 2011 – 2012

- *. Member of Expert Committee constituted to frame the course curriculum of M.E. Wireless Communication, PIT, PTU, Jalandhar in October, 2011.
- *. Member of the Steering Committee of Microsoft I-Spark Center, CGC, Landran, 22-12-2010 to 05-05-2011.
- *. Lab incharge of communication systems lab, August, 2007 – April, 2012, ECED, TIET, Patiala
- *. Member of B.O.S. ECED in TIET, Patiala, Punjab in 2008-2010 & in other Universities, India
- *. Member PG/Ph.D. Admission Committee & Member of Doctoral Committee, TIET, Patiala, Punjab
- *. External Reviewer as well as Evaluator of M.E./M.Tech./PG theses in various reputed Universities and Institutes
- *. Reviewer of IEEE, Elsevier, Taylor & Francis and Springer
- *. Member of International Scientific Committee, 5th WSEAS international conference on signal processing, Istanbul, Turkey, 2005-2006
- *. Nominated Research Scholar in placement cell for Ph.D. students at I.I.T. Roorkee
- *. Student Member IEE, 2000-2002
- *. Student Member IEEE, 1999-2000
- *. Executive Member of S.T.C. (Technical society affiliated to Institution of Engineers, India) from 1999 to 2000 (Student member, 1996-2000)
- *. Organizer of Fiesta de Athene' 98 and 99, National Level Technical Symposium, G.N.D.E.C., Ludhiana, Punjab, India
- *. Represented the school in regional sports competition

ACHIEVEMENTS & AWARDS

- *. Recipient of Performance Incentive Scheme 2006-2007, 2007-2008, 2008-2009, 2009-2010, and 2010-2011, 2011-12, 2012-13, Thapar Institute of Engineering & Technology (TIET), Patiala
- *. Recipient of MHRD Fellowship at Indian Institute of Technology Roorkee, India
- *. 1st Rank in Master of Engineering for academic performance with Institution Medal and Gold Medal in 2001 and 2002 respectively, TIET (Deemed University), Patiala, Punjab, India
- *. Recipient of GATE Fellowship at TIET, Patiala, Punjab, India
- *. Awarded University Merit Certificate for securing 9th Rank in the Punjab Technical University in U.G. Engineering Programme
- *. 2nd Rank, Technical Paper Presentation, S.T.C., G.N.D.E.C., Punjab, India, 1996
- *. 1st Rank in Physics & English and 2nd Rank in school, 10+2 final examinations
- *. State Scholarship and National Scholarship in 10+2 and Matriculation respectively
- *. 2nd Prize, in Rangoli (Expressions, in Framez'98), G.N.D.E.C., Ludhiana, Punjab, India

P.G. DISSERTATIONS GUIDED

M.E. Theses Guided:-

- *. *Thirty Three* M.E. theses guided as supervisor (solo)
- *. *Six* M.E. theses guided as co-supervisor
- *. M.E. research students are currently under supervision

Ph.D. Theses Guided:-

- *. *One* Ph.D. research student is currently under supervision (solo) in TIET
- *. *Two* Ph.D. theses guided as supervisor (solo) in TIET
- *. *Two* Ph.D. theses guided as co-supervisor in TIET

PERSONAL PROFILE

Date of Birth:- 28th April

Father's Name:- Late Dr. Jagdish Chander Kohli, Ph.D. (Retd. Professor)

Wife's Name:- Dr. Poonam G. Kohli, M.B.B.S., M.D. (Associate Professor)

Son's Name:- Adwitiya Jagdish Kohli;

Address for Correspondence Only:-

House No. 30, New Lecturers Quarters',

Type III, Thapar Institute of Engineering & Technology, Patiala – 147004,

Punjab, India.
