RESUME OF PROF. (Dr.) MANOJ KUMAR

Name : Dr. Manoj Kumar

Current Profile : i) Professor & Head,
Deptt. Of Electronics & Communication Engineering,
DAV Institute of Engineering & Technology,
Kabir Nagar, Jalandhar, Punjab, India. PIN-144008

ii) Dean (Student Welfare), DAVIET, Jal.

iii) Officer Incharge M. Tech. (ECE),
PTU Regional Centre-DAVIET, Jal.

iv) Chairman, Board of Studies; Electronics & Communication Engineering, Punjab Technical University, Jalandhar(2009-12).

Significant Distinctions:

1. 46 Research Publications in leading International and National journals & conferences.
2. Authored 8 Engineering Text Books and reviewed 4 Engineering Books.
3. Earned Grant-in-Aid worth Rs.3.22 lacs and Rs 1.25 lacs from AICTE for National Conference and Short Term Training Programme in the year 2008-09 at DAVIET, Jal.
4. Reviewer for Elsevier Science's International Journal-Optical Fiber Technology and World Scientific & Engineering Academy and Society (WSEAS) for international conferences.
5. Member, Board of Studies; Electronics & Communication Engineering, Punjab Technical University, Jalandhar(2003-09).
6. Member, Executive council, Punjab Academy of Sciences Patiala (2009-2012)
7. Convener, National Conference on Optical and Wireless Communication (NCOW-2008), organised by Department of Electronics & Communication Engineering, DAV

Institute of Engineering & Technology, Jalandhar in association with Institution of Engineers (India) & Rsoft Design Group,USA from November 27–28, 2008.

8. Selected as chairman for three sessions in WSEAS international conference at Cambridge University, U.K from Feb. 20-22, 2008.
9. Co-chaired a panel discussion session on "Next Generation Wireless Technologies" and chaired paper presentation session in the International Conference (ICCSA-2006) held during June 27-29, 2006 at National University, San Diego, California, USA.
10. Lead the faculty delegation to explore the collaborative interactions between Rsoft Design Group, USA & DAVIET and succeeded in signing of m.o.u between Rsoft, USA & DAVIET during Dec. 2004.
11. Interacted with the Research Scholars & Faculty of Light Wave Technology Labs at Columbia University & Princeton University in USA for exchange of Know How in the frontier & emerging areas of Technology during Dec. 2004.
12. Convener, "Techkriti-National Level Technical Symposium" organized annually at DAVIET, Jalandhar since 2005.
13. Organizing Secretary, C3E (Consortium of Electrical & Electronics Engineers) at DAVIET, Jalandhar.
14. Life Member, ISTE and Punjab Academy of Sciences.

Date of Birth : August 29, 1969

Educational Qualification : B.E(ECE), M.Tech(ECE), Ph.D

Nationality : Indian

Contact Information

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PIN-144008
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Residence: 133, BSF Colony, P.O New Grain Market, Jalandhar, Punjab (India)
PIN-144008 Phone: (+91-181-2203898)

Job Profile : Education, Vocational Training & Research

Targeted Trainee(s) :
1. Under Graduate & Post Graduate students in Electrical, Electronics, Telecommunication, Computer Sc. Engg. & IT
2. Faculty of other Institutions.
3. Professionals from Industry.

Subjects Taught : Optical Fiber Communication, Analog & Digital Communication, Cellular & Mobile Communication, Data Communication

Specialization : Optical Fiber Communication, Wireless Comm.

Countries Visited : U.S.A, U.K, France, Italy, Pakistan.

Professional Experience : Teaching & Research : 18 years (1991-2009)

- Faculty Head in Department of Electronics & Communication Engg. and Research Centre at DAV Institute of Engg. & Technology since July 2001 till date.
- On deputation as Principal, DAV College of Engg. & Technology, Kanina (Mohindergarh) from 13-8-2004 to 27-06-2005.
- Lecturer at Mehr Chand Polytechnic, Jalandhar from February 1992-July 2001.
- Lecturer at Seth Jai Prakash Polytechnic, Damla (Yamuna Nagar) from August 1991-January 1992.

Current Research Activities:

Optical soliton transmission system (long-distance, high-speed optical transmission):

The term soliton (formed from Latin solitarius – solitary) is one of the fundamental unifying ideas in modern theoretical physics and mathematics. An impressive practical implementation of the soliton concept has been achieved in fiber optics, where soliton pulses are used as the information carriers to transmit digital signals over long-haul. Optical soliton research, full of innovative spirit, has recently arrived at the stage of a first real-world implementation of the soliton concept in communication systems. Realization of soliton-based transmission will clearly demonstrate how the results of the fundamental soliton theory can be successfully exploited in very important practical applications.

Practical and research interest is directed mostly towards two main goals: development of effective high capacity long-haul transmission systems and the upgrade of existing terrestrial fiber networks. There are two principal approaches to overcome these limitations: in the first (that can be called 'linear') both the chromatic dispersion and nonlinearity are considered to be detrimental factors while in the second, the nonlinear and dispersive effects are counter balanced (such systems can be called 'nonlinear'). Nonlinear effects that are detrimental in the 'linear' systems can be used to improve transmission characteristics of optical communication systems.

- Our investigations have been focused to suggest alternative optical soliton based designs that are suitable for already installed optical transmission links. Based on our investigations, it is recommended that one of the promising ways to upgrade installed optical network is to exploit the 1.3 μm optical window, where the step-index fibers have their zero dispersion wavelength, using wide-bandwidth polarization-insensitive SOA's. The pattern effect and the impact of chirp on pulse propagation after amplification have been investigated. The observations are based on modeling and simulation optical soliton transmission link. Optical soliton pulse transmission over distances of the order of several hundreds of kilometers has been shown with and without initial chirp.

- We investigated that the Kerr non-linearity stabilizes solitons against splitting due to birefringence. The birefringence induced time delay between X and Y polarization

components reduces to 200 ps from 440 ps when the Kerr non-linearity is taken into account at polarization angle and fiber length of 631.72 km (10 soliton periods) & 1264.344 km (20 soliton periods) for both the linear and nonlinear soliton transmission.

- Our research goal was to realize long-haul, large capacity optical transmission by taking advantage of optical nonlinear effects, including optical solitons and nonlinear techniques for generating ultra short optical pulses. The soliton is a wave that exists in nature that can propagate over long distances without any distortion of its waveform. We have developed several novel path-averaged long-haul soliton transmission techniques, such as the use of path averaged soliton, dispersion-managed (DM) soliton, loss-managed soliton transmission systems. By adopting these techniques, we can increase the transmission capacity and upgrade installed terrestrial or submarine cables

  The investigations demonstrate the robustness of path-averaged soliton in a long-haul transmission link of 17,000 km at a bit rate of 10 Gbps. It has been investigated that relatively stable pulses can propagate over longer distances in long-haul dispersion-managed soliton regime in a fiber link with loss and periodic amplification by keeping the average dispersion small but non-zero. It has been shown that the dispersion management is achieved through soliton pulse narrowing in anomalous dispersion fiber and broadening at DCF. In conclusion, we have reported that the pulse propagation in dispersion-managed soliton transmission link is similar to conventional transform-limited soliton transmission link.

- We have also carried out performance evaluation of the Optical Soliton Transmission Systems under the influence of various linear and non-linear fiber parameters & performance measures. Performance evaluation has been carried out for the different modulation formats viz. NRZ, RZ Soliton, RZ Raised Cosine and RZ Super Gaussian.

  Simulations for data formats Return to Zero (RZ), Non Return to Zero (NRZ), RZ-Soliton, Duobinary and their subcategories has been done with and without ideal dispersion compensation for optical communication systems. The results show that in general dispersion compensation improves timing jitter. RZ-Rectangular pulses show the smallest value of jitter without compensation. It has been observed that the RZ-Raised cosine and Soliton gives minimum jitter after ideal compensation. It has been reported that the BER performance of optical communication system using duobinary data format is 10^{-8} and 10^{-37} before and after dispersion compensation respectively. Further the comparative study show that the timing jitter is lowest in case of RZ-Soliton (0.0127 ns) after dispersion compensation and 0.0135 ns for RZ-Rectangular data format before dispersion compensation.

Future Research Interests:

1. Performance evaluation of high speed, long-haul optical soliton transmission systems.
2. Mobile Ad-hoc Networks.
3. Performance Evaluation & Network Management of Cellular Systems

Academic Achievements:

a. Research Publications : 46

Journal Publications:

International:

1. **Manoj Kumar**, Ajay K Sharma and T. S. Kamal, "10 Gbps Optical Soliton Transmission Link using SOA In-Line Amplifier on Standard SMF at 1.3mm", Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany, Vol. 118, pp 34-37, 8 January 2007. doi:10.1016/j.ijleo.2006.01.008.

2. Manjit Singh, Ajay K Sharma, R. S. Kaler and **Manoj Kumar**, "Timing jitter dependence on data format for ideal dispersion compensated 10 Gbps optical communication systems", Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany, Volume 119, Issue 7, Pages 309-314, May 19, 2008. doi:10.1016/j.ijleo.2007.01.007.

3. **Manoj Kumar**, Ajay K Sharma and T S Kamal, "Simulative demonstration of soliton pulse stability over nonlinear regime in birefringent optical fiber". Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany, Volume 120, Issue 2, January 2009, Pages 93-96, doi:10.1016/j.ijleo.2007.07.003.

4. **Manoj Kumar**, Ajay K Sharma and T S Kamal, "Significance of Pre-chirping on Long-haul Path-Averaged Soliton Impulse in Re-Circulating Loop at 10 & 20 Gb/s with TOD". Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany, Volume 120, Issue 3, January 2009, Pages 106-114, doi:10.1016/j.ijleo.2007.06.015.

5. Manju Sharma, **Manoj Kumar** and Ajay K Sharma, "HTTP and FTP Statistics for Wireless and Wire-line Network with and without Load Balance Based on OPNET", Published in International Journal of Information and Systems Sciences, Volume 5, Number 1, pp 112-125, 2009

6. **Manoj Kumar**, Ajay K Sharma, T S Kamal and Jagjit Singh Malhotra, "Comparative Investigation and Suitability of Various Data Formats for 10 Gbps Optical Soliton Transmission Links at Varied Chirp", Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany, Volume 120, Issue 7, March 2009, Pages 330-336. doi:10.1016/j.ijleo.2007.09.008.

7. **Manoj Kumar** and Ajay K Sharma, "Performance improvement by positioning DCF non-symmetrically in a periodic amplified re-circulating loop for long-haul optical soliton transmission link", Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany, Volume 120, Issue 14, September 2009, Pages 710-714. doi:10.1016/j.ijleo.2008.02.022

8. **Manoj Kumar**, Ajay K Sharma and T S Kamal, "Performance Evaluation of Path-Averaged Soliton Pulses in Loss-Managed 10-Gbps Soliton Transmission Link over a Long Haul", Available online w.e.f August 12, 2008 for publication in Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany. doi:10.1016/j.ijleo.2008.05.017.

9. Neeru Malhotra and **Manoj Kumar**, "Investigations on PMD Induced Penalties in 40 Gbps Optical Transmission Link", Available online w.e.f September 3, 2008 for publication in Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany. doi:10.1016/j.ijleo.2008.07.007.

10. Jagjit Singh Malhotra and **Manoj Kumar**, "Performance Analysis of NRZ, RZ, CRZ & CSRZ data formats in 10 Gb/s optical soliton transmission link under the impact of chirp and TOD" Available online w.e.f March 26, 2009 for publication in Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany. doi:10.1016/j.ijleo.2008.08.010

11. Bindiya Jain, **Manoj Kumar**, "Simulative analysis of pre- and post-compensation using CRZ format in WDM optical transmission link", Accepted for publication in Elsevier Science's International Journal for Light and Electron Optics, Optik, Germany.

National:

1. **Manoj Kumar**, Ajay K Sharma, T S Kamal and Moin Uddin, "Demonstration of Robustness of Path-Averaged Soliton Pulses in Loss-Managed Soliton Transmission Link over a Long Haul with10-Gb/s Modulated Signal", Invertis Journal of Science & Technology, Vol. 1, No. 1, pp 55-60, 2007.

2. Ajay K Sharma, **Manoj Kumar** and T S Kamal, "Investigations on 24,500 km Long-haul Path-Averaged Soliton Transmission Link at 10 & 20 Gbit/s with Higher order Dispersion at Varied Chirp", International Journal of physical sciences, Ultra Science Vol. 19 (1) M, pp 211-216, 2007.

3. Neeru Malhotra and **Manoj Kumar**, "Illustrative Investigations on PMD Induced Penalties in 80 Gbps Optical Transmission Link", The Icfai Journal of Electrical and Electronics Engineering, Vol.1, No.3, pp30-42, 2008.

4. **Manoj Kumar**, Ajay K Sharma and T S Kamal, "Long-haul Dispersion Managed Soliton Transmission Link Over a Fiber Length of 18000 km with Loss and Periodic Amplification", The Icfai Journal of Electrical and Electronics Engineering Vol.1, No.4, pp. 33-38, 2008.

5. Bindiya Jain, **Manoj Kumar**, Performance improvement with dispersion compensation in conjunction with pre-chirping using RZ format in WDM optical transmission link, Journal of Punjab Academy of Sciences 4(1&2), pp23-27,2007.(Printed in 2009).

6. Kiran Ahuja and **Manoj Kumar**,"Link budget optimization of propagation models at 900/1800 MHz" (Accepted for publication in The Icfai Journal of Electrical and Electronics Engineering).

Conference Proceedings:

International Conference:

1. Vasudha, Ajay K Sharma and **Manoj Kumar**, "Investigations on Routing Protocols for Inbound/Outbound Traffic" Accepted for publication in The Fifth International Conference on Computer security, ICCNS-2008, Paper ID : CP21 to be held during September 26-28, 2008 at Vishwakarma Institute of Technology, Pune, India.

2. Vasudha, Ajay K Sharma and **Manoj Kumar**, "Performance Evaluation of E-mail, FTP and Database Traffic for RIPv2 with EIGRP", The Ninth ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD2008) Sponsored by IEEE to be held during August 6 - 8, 2008 at Phuket, Thailand.

3. Neeru Malhotra and **Manoj Kumar**, "Investigations on PMD Induced Penalties in 40 Gbps Optical Transmission Link", Accepted for publication in **MWON** 2008 : International conference on mobile, wireless and optical communication networks, Paper I.D.Code:29121, May 21-23, 2008 at Bangkok, Thailand.

4. Vasudha, Ajay K Sharma and **Manoj Kumar**, "HTTP Response for RIPv2 with EIGRP", International Conference on Computer Science, ICCS-2008, April 25-27, 2008, Rome, Italy.

5. Kamaljit Singh and **Manoj Kumar**, "Simulative analysis of operating conditions for Raman Amplifier in a hybrid amplification system", 8th IASTED International conference on wireless and optical communications, May 26-28, 2008,Quebec, Canada.

6. Kamaljit Singh, **Manoj Kumar**, "RIN evaluation for optimum performance of optical transmission system with dispersion compensation", International computer Science and Technology conference ICSTC 2008), April 1-3, 2008,San Diego California, USA.

7. Kamaljit Singh, **Manoj Kumar,** "Simulative Analysis of operating conditions for Flat amplitude Multi wavelength Brillouin-Raman comb fiber laser", International Computer Science and Technology conference ICSTC 2008, April 1-3 , 2008, San Diego, California, USA.

8. Gaurav Sethi and **Manoj Kumar**, "Simulation and Performance analysis of DSDV, DSR, in MANETs", International computer Science and Technology conference, ICSTC 2008, 1st March – 3rd April, 2008, San Diego, California.

9. Gaurav Sethi and **Manoj Kumar**, "Performance analysis of AODV, DSR and TORA in mobile ad hoc network – a simulative study", International technology, education and development conference INTED 2008, 3rd – 5th March 2008, Valencia, Spain.

10. Gaurav Sethi and **Manoj Kumar**, "Simulation and comparison of communication protocols in ad hoc networks "Paper ID Number: 575- 778 International Conference, WSEAS 2008- 09, February, 18-22, 2008, University of Cambridge, UK.

11. Gaurav Sethi and **Manoj Kumar**, "Simulative analysis of routing prootocols in mobile ad-hoc networks", IEEE sponsored International conference- "4th International Symposium on 'High Capacity Optical Networks and Enabling Technologies" HONET-2007, November 18 - 20, 2007, Dubai.

12. Kamaljit Singh Bhatia and **Manoj Kumar**, "RIN Evaluation for Optimum Performance of Optical Transmission System", IEEE sponsored International conference- "4th International Symposium on 'High Capacity Optical Networks and Enabling Technologies" HONET-2007, November 18 - 20, 2007, Dubai.

13. Manju Sharma and **Manoj Kumar**, "Comparative Investigation on the Media access Delay in Wireless LAN for a Switched and Routed Network based on OPNET", IEEE sponsored International conference- "4th International Symposium on 'High Capacity Optical Networks and Enabling Technologies" HONET-2007, November 18 - 20, 2007, Dubai,

14. Manoj Kumar, Ajay K Sharma and T S Kamal, "Demonstration of Robustness of Path-Averaged Soliton Pulses in Loss-Managed Soliton Transmission Link over a Long Haul with10-Gb/s Modulated Signal", published in OSA & SPIE sponsored international conference "OPTICS IN SOUTHEAST", September 6-8, 2006 at Charlotte, North Carolina, USA.

15. Ajay K Sharma, **Manoj Kumar** and T S Kamal, "Investigations on 24,500 km Long-haul Path-Averaged Soliton Transmission Link at 10 & 20 Gbit/s with Higher order Dispersion at Varied Chirp", published in OSA & SPIE sponsored international conference "OPTICS IN SOUTHEAST", September 6-8, 2006 at Charlotte, North Carolina, USA.

16. Sudhir Sharma & **Manoj Kumar**, "Impact of Harmonics in Electrical Distribution Systems", International Conference on Energy & Environmental Technologies for Sustainable Development, Paper Code: TP-209, NIT, Jaipur, Oct 8-10, 2003.

National Conference:

1. Sheetal Nave and **Manoj Kumar**, "Understanding the Radio Revolution", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

2. Manju Sharma and **Manoj Kumar**, "HTTP and FTP Statistics for Wireless and Wire-Line Network with and without Redundancy Based on OPNET", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

3. Vanita Kamra and **Manoj Kumar**, "Performance Analysis of Single Tone Radio-Over-Fibre System Set-Ups using Different Combinations of Laser Modulation & Optical

Preamplifiers", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

4. Harsimran Jit Kaur and **Manoj Kumar**, "Performance Evaluation of Digital Modulation Techniques on Radio Over Fiber for 3G and Beyond", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

5. Harpreet Kaur, Neeru Malhotra and **Manoj Kumar**, "FTTH using PON-An Emerging Broadband Network", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

6. Bindiya Jain and **Manoj Kumar**, "Performance Evaluation of NRZ, RZ, CSRZ, CRZ Modulation Formats in Ultra Long Haul WDM System", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

7. Harpreet Kaur, Neeru Malhotra, **Manoj Kumar** and Aarti kochher, "Performance Analysis of FTTH BPON System with Triple Play", Published in the proceedings of the National Conference on Optical and Wireless Communication (NCOW- 2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar from November 27–28, 2008.

8. Manju Sharma and **Manoj Kumar**, "Comparative Investigation on Throughput and Client Response Time for a Switched and Routed Wireless LAN based on OPNET" Presented and published in National conference on Emerging Technologies in Computing and Communication, ETCC-2007, pp 436-440, held at NIT Hamirpur during July 27-28, 2007.

9. Jagjit Singh, **Manoj Kumar, "**Comparative study of data formats for high bit rate lightwave transmission systems" 10th Punjab Science Congress, D-1-23, DAV Institute of Engg. & Technology, Jalandhar, Feb, 7-9,2007.

10. Kamaljit Singh, **Manoj Kumar, "**Studies on the impact of RIN on the performance of optical transmission" 10th Punjab Science Congress, D-1-21, DAV Institute of Engg. & Technology, Jalandhar, Feb, 7-9,2007.

11. Manju Sharma and **Manoj Kumar, "**Radio-over-Fiber for Cellular Systems: Benefits & Future Trends", National Conference on "Electronic Circuits & Communication Systems (ECCS'06)", pp317-323, February 9-10, 2006.

12. **Manoj Kumar** & Ajay K Sharma, "Recent Progress in Dispersion Managed Soliton Transmission Technologies", IDSS-BC-2003.

13. Sudhir Sharma & **Manoj Kumar,** "Effects of Harmonics on Power Quality" in National Conference on Power Systems & Energy Management at IET, Bhaddal, 23rd May, 2003.

b. Text Books Authored/Co-Authored: Eight

1. **Manoj Kumar**, "Principles of Communication Engineering", M/s. Satya prakashan, New Delhi.

2. Dr. Ajay Sharma & **Manoj Kumar**, "Communication Systems-I ", M/s. Satya prakashan, New Delhi.

3. **Manoj Kumar**, "Troubleshooting & Maintenance of Electronics equipment", M/s. Satya prakashan, New Delhi.

4. **Manoj Kumar**, "Electronic Components & Materials", M/s. Satya prakashan, New Delhi.

5. K.D. Prasad & **Manoj Kumar**, "Electronic Devices & Circuits –I", M/s. Satya prakashan, New Delhi.

6. **Manoj Kumar**, "Applied Power Electronics", M/s. Satya prakashan, New Delhi.

7. **Manoj Kumar**, Sudhir Sharma & Jagjit Singh Malhotra, "Basic Electrical & Electronics Engineering", M/s Jaico publishers, Bombay.

8. **Manoj Kumar** & Manisha, "Analog Communication Systems", M/s. Satya prakashan, New Delhi.

c. Text Books Reviewed : Four

1. Taub & Scheling, "Principles of Communication Systems," Tata McGraw Hill. (International Edition)
2. "Fundamentals of Semiconductor Devices", Tata McGraw Hill.
3. Salivahanan, Vallavaraj & Gananpriya "Digital Signal Processing", Tata McGraw Hill.
4. A. Bruce Carlson & Paul B. Crilly, "Communication Systems-An Introduction to Signals and Noise in Electrical Communication" 5th Edition. Tata Mc-Graw Hill.

d. Presentations/Conferences (International and National)

1. Delivered Key Note Address in UGC Sponsored national conference on "Role of IT in Education", organised by Department of Computer Science DAV college Amritsar from Feb. 28-March 1, 2009.
2. Delivered an expert talk on 'Wimax" in winter school on "Recent trends in Mobile Computing & Communication Technologies", organised by Department of Computer Science & Engg., N.I.T Jalandhar from Dec.22, 2008 to Jan. 02, 2009.
3. Convener, National Conference on Optical and Wireless Communication (NCOW-2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar in association with Institution of Engineers (India) & Rsoft Design Group,USA from November 27–28, 2008.
4. Conducted a ZOPP planning workshop at Doaba Institute of Engg. & Technology, Kharar in Sep. 2008.

5. Attended National Conference on "Innovation in Education", July 27-28, 2008 at India Habitat Centre organized by DIEMR at Mumbai, India.
6. Selected as chairman for three sessions in WSEAS international conference at Cambridge University, U.K from Feb. 20-22, 2008.
7. Participated in INTEL sponsored International Conference "Intel Developer Forum India", Oct. 10-11,2006 at Bangalore.
8. Co-chaired a panel discussion session on "Next Generation Wireless Technologies" and chaired paper presentation session in the International Conference (ICCSA-2006) held during June 27-29, 2006 at National University, San Diego, California, USA.
9. Attended National Conference on "Quality in Education: Challenges & Responses", April 7-9, 2006 organized by DIEMR at Mumbai, India.
10. Lead the faculty delegation to explore the collaborative interactions between Rsoft Design Group, USA & DAVIET and succeeded in signing of m.o.u between Rsoft, USA & DAVIET during Dec. 2004.
11. Interacted with the Research Scholars & Faculty of Light Wave Technology Labs at Columbia University & Princeton University in USA for exchange of Know How in the frontier & emerging areas of Technology during Dec. 2004.
12. Attended Two-Day Conference on Field Programmable System on Chip World Semiconductor Forum GOSPL from 30-31 Oct.2004.
13. Attended Microsoft Academia Summit-2004 at Bangalore on April 14-15, 2004.
14. Attended International conference (INAE) on Nanotechnology (ICON-2003) organized by Indian National Academy of Engg. at CSIO, Chandigarh.
15. Delivered expert talk on "Optical Soliton Transmission System" in ISTE sponsored STTP on Optical Communications-emerging Trends; It's Role and Technology appreciation from March 31st to April 11th 2003 at Punjab Engineering College, Chandigarh.
16. Attended International Conference on "Culture of Peace & Non-Violence" at Hans Raj Mahila Maha Vidyalaya, Jalandhar from 19th –21st December, 2002.

e. Awards and Prizes distinction

1. "Jewel of India" award by Indian Solidarity council for the year 2006.
2. Silver Medal in M.Tech. (Electronics & Comm. & Engg.) from Punjab Technical University, Jalandhar.
3. Received best PI coordinator award from Secretary, D.O.E, Govt. of India under IMPACT-SSS project sponsored by D.O.E, GOI; World Bank and Swiss Development Cooperation, Switzerland.

f. Consultancy :

1. Data Routing of all the BSNL exchanges of North India on ISDN using Linux.
   Status : Executed
2. Image, data and voice transmission using wireless communication for defence.
   Status : Executed

g. Workshop, Conferences organized:

1. Convener, National Conference on Optical and Wireless Communication (NCOW-2008), organised by Department of Electronics & Communication Engineering, DAV Institute of Engineering & Technology, Jalandhar in association with Institution of Engineers (India) & Rsoft Design Group,USA from November 27–28, 2008.

2. Co-ordinator, 10th Punjab Science Congress held at DAV Institute of Engg. & Technology, Jalandhar in collaboration with PTU, Jalandhar & Punjab Academy of Sciences of Patiala , Feb, 7-9,2007.
3. Convened Workshop on DELNET (Developing Library Networks)
4. Conducted ZOPP (Zeal Oriented Project Planning).
5. Convened Short Term Programme on "Advance Communication Systems"

h. Training, courses attended:

- Training on OptSim Simulation Tools at Rsoft, USA.
- Instruction Enhancement Programmes(8 weeks duration) under world Bank Project IMPACT on :
  1. "Electronic Components & Materials" at IIT Delhi.
  2. "Maintenance of Electronic Equipment" at NTTF Resource Centre, Bangalore.
  3. "Electronic Communications" at IIT, Delhi.
  4. "Analog Electronics" at IIT, Delhi.
  5. "Microprocessors & Telecom Equipment" at CEDT, Mohali.

i. M.Tech. Thesis (Supervised/Under supervision):

M.Tech. Thesis (Supervised) : 08
M.Tech. Thesis (Under supervision) : 02

Titles of M.Tech. Thesis (**Supervised**):

- Manju Sharma, "Performance Analysis of Switched and Routed Network in Wireless Communication Based on OPNET" (2007).
- Jagjit Singh Malhotra, "Performance Analysis of Data Formats in Optical Soliton Transmission Link under the impact of TOD & chirp" (2007).
- Gaurav Sethi, "Simulative Analysis of Routing Protocols in Mobile Ad-hoc Networks" (2007).
- Kamaljit Singh Bhatia, "Investigations on Design issues for Long-haul Optical Transmission System" (2007).
- Neeru Malhotra, "Investigations on PMD Induced Penalties in High Bit Rate Optical Transmission Links" (2007).
- Vasudha, "Performance Enhancement of Routing Internet Protocols using OPNET" (2008).
- Harsimran Jit Kaur, "Performance Evaluation of Digital Modulation Techniques on Radio over Fiber for 3G and Beyond" (2009).
- Bindiya Jain, "Performance analysis of data formats in Pre- and Post- compensated dispersion managed long-haul WDM optical transmission link" (2009).

M.Tech. Thesis (**Under supervision**):

- Vanita Kamra,"Analysis of a Single & Multi- tone Radio over Fibre system comparing four different system set-ups".

- Sandeep Kath, “Improving the request routing mechanism in CDN”.

j. Ph. D. Thesis (Under supervision):

- Jagjit Singh Malhotra, “Performance evaluation of multi-channel optical transmission systems & networks”.