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### NAME & ADDRESS

Farokh Marvasti

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### FIELDS OF INTERESTS

Non-uniform Sampling in Signal Processing, Telecommunications, Speech, Image and Video Processing

### EDUCATION

Degree	University	Period
B.S.(Magna Cum Laude)	Rensselaer Polytechnic Institute	1966-1970
M.S.	Rensselaer Polytechnic Institute	1970-1971
Ph.D	Rensselaer Polytechnic Institute	1971-1973

All in Electrical Engineering and Communication Systems

### PROFESSIONAL EXPERIENCE

University College London (UCL), Visiting Professor	(2011-2012)
Sharif University of Tech., Professor at EE Dept.	(2000- Present)
Iran Telecommunication Research Center, International Affairs, Head of Multimedia Group and Head of Institute of IT)	(1999- Present)
King's College London, Lecturer	(1992-2003)
Lucent Technologies UK working on Error Concealment	(1997-1998)
Illinois Institute of Technology, Associate Professor	(1987-1991)
Consultant in Video Compression	(1991-1992)
AT&T Bell Labs., USA., Member of Technical Staff on ATM, 4ESS, 5ESS Switching Systems and Operator Systems (OSPS)	(1985-1987)
University of California, Davis, Visiting Professor	(1984-1985)
Founder and director of Iran Power Research Center (MATN)	(1982-1984)
Member of the Board of Iran NEC (INEC),	(1982-1984)
Director of Sa Iran	(1981)
Director and Consultant to the minister of PTT,	(1980-1981)
Sharif University of Tech., Teheran, Associate Professor	(1976-1985)

Singer Co., Kearfott Division, USA, Staff Engineer and a Consultant on Coding and Modulation (1974-1976)

Graphic Sciences, Danbury, Ct., Senior Engineer, designing digital facsimile machines (1972-1974)

## **CONSULTANCY**

Consultant to British Telecom on Video Recovery: (Summer 1997)

Consultant to IBM UK on Data Compression: (1998)

Consultant to Sky Pix: Video Compression Techniques: (1991-1992)

Consultant to AT&T Bell Labs, in digital switching specially 5ESS: (1988)

Consultant to Ampex Corp: (1985-1986)

## **ADMINISTRATIVE EXPERIENCE**

Electric Power Research Center, Consultant: (2000-2001)

Founder of Shahid Nili (2011)

Director and Founder of Advanced Communication Research Institute (2004- present)

Director of Center of Excellence in Multi- Access Communication System (2005-2011)

Founder of Shahid Nili Research Institute (2011-present)

Director of IT Institute at ITRC: (2004- 2006)

Director and Founder of Multimedia Group at ITRC: (2001-2004)

Director of International Affairs at ITRC: (1999-2001)

Director and Founder of the new Telecommunication Research Center (1979-1981)

Member of the board of NEC (Nippon Electric Co.) in Iran, (1980-1981)

Managing Director of Iran Electronic Industries: (1981-1982)

Director and Founder of Electric Power Research Center, (1982-1984)

## **GRANTS**

£70,000, Lucent Technologies: (1998-2002)

£135,000, EPSRC Grant: (1999-2001)

£75,000 from Ayretel Ltd, 3 years studentship: (1997-2000)

£61,667 Wireless Facilities Inc to Support a Ph.D student: (1997-2000)

£25,767 Wireless Facilities Inc to Support a Ph.D student:	(1996-1997)
£45,000 from Fujitsu Ltd, on speech and channel coding:	(1995-1997)
£10,000 from Signals and Software Ltd. on Low Bit Video Phones:	(93-94)
Also from the same source £4400/year for a Ph.D student:	(1993-1996)
\$150,000 from Sky Pix on Video Compression Techniques:	(1991-1992)
\$160,000 from US Office of Naval Research (ONR):	(1990-1992)
\$50,000 from Ampex Corp. on video tape recording:	(1985-86)
\$2,000,000 from UNDP for the development of Laboratories for Electric Power Research Center:	(1982-1984)
\$3600 from Telecommunication Center of IIT and \$1800 for Student Support from Pritzker Institute of Biomedical Engineering:	(1989-1990)
\$1000 from the Provost of the IIT to publish my book on Zero-Crossings and Nonuniform Sampling:	(1988-1989)

## AWARDS

- 1 - International scholarship from R.P.I., (1966-1970)
- 2 - Fellowship from R.P.I. for MS degree, (1970-1971)
- 3- Research Assistantship for Ph.D degree, (1971-1973)

۴- پژوهشگر برتر سال ۱۳۹۰ دانشگاه صنعتی شریف و دریافت یک پایه تشویقی

۵- پژوهشگر برتر سال ۱۳۹۱ دانشگاه صنعتی شریف و دریافت یک پایه تشویقی

۶- استاد برجسته سال ۱۳۹۲ فرهنگستان علوم – گروه علوم مهندسی

## SOCIETIES

- 1 - Senior member of IEEE.
- 2 - Member of honorary societies of Tau Beta Pi, Sigma Psi, Eta Kappa Nu.
- 3 - Member of IEICE of Japan.
- 4 - Member of SIAM (Society of Industrial and Applied Mathematics).
- 5 - Member of American Society of Engineering Education.
- 6 - Member of Data Communication Systems Committee of IEEE Communication Society.
- 7 - Member of Signal Processing and Communication Electronics Technical Committee of IEEE Communication Society.

## OTHER HONOURS

- 1- Listed in Who is Who in the World in the 1994-1995, 1995-1996 and 1996-1997 editions.
- 2- Listed in the International Biographical Centre of Cambridge, 1995-1996.
- 3- Listed in the American Biographical Institute, 1995-1996.
- 4- Listed in Who's Who in Science and Engineering, 3rd edition.
- 5- Listed in Who's Who in Finance and Industry, 30th edition, 1988-1999.

## PAST EDITORIAL

- 1-Editor of IEEE Trans. on Communications on data communications and error correction codes.
- 2- Member of the Advisory Board of Applied Signal Processing.
- 3-A Member of the Editorial Advisory Panel of Journal of Electrical Science and Technology.
- 4-A technical reviewer for IEEE Trans. on ASSP, CAS, Journal of Optical Society of America, Applied Optics, and IEE Proc.

## قراردادها

۱. "امکان سنجی ساخت بیسیم متحرک MIMO" کارفرما: شرکت صنایع مخابرات صا ایران
۲. "معرفی تبدیلات جدید برای رمزنگاری امن سیگنال های یک بعدی و دوبعدی و فایل های باینری" کارفرما: شرکت صنایع مخابرات صا ایران
۳. "امکان سنجی پیاده سازی شبکه ترانک عمومی" کارفرما: سازمان تنظیم مقررات و ارتباطات رادیویی
۴. "طراحی و پیاده سازی نهان نگاری سیگنال های چند رسانه ای (موزیک و تصویر) با ظرفیت های گوناگون" کارفرما: مرکز تحقیقات سیاست علمی کشور
۵. "طراحی و پیاده سازی یک سیستم نهان نگاری اطلاعات تصویری/ ویدئویی به منظور حفظ حق مولف" کارفرما: مرکز تحقیقات مخابرات ایران
۶. " فاز صفر تحقیقات بنیادین در زمینه پردازش سیگنال " کارفرما: مرکز تحقیقات مخابرات ایران
۷. "طراحی سیستمی طبقه گیرنده و دمدولاتور یک ست تاپ باکس DVB-T" کارفرما: شرکت خصوصی

۸. "مطالعه، بررسی و بهبود کیفیت مبدل های آنالوگ به دیجیتال"  
کارفرما: مرکز صنایع نوین

۹. "به کارگیری روش های نوین برای بازسازی خطا در کدهای کانولوشنی و تعمیم آن به میدان های حقیقی"  
کارفرما: صندوق حمایت از پژوهشگران کشور

## **BOOKS**

1-A Unified Approach to Zero-Crossings and Nonuniform Sampling of Single and Multidimensional Signals and Systems, NONUNIFORM Publication, 1987. (This book has been reviewed by the IEEE Magazine of Circuit and Systems- March 1990, SIAM Review-Sept. 1990, and selected in the book alert section of the IEEE.

2- Nonuniform Sampling: Theory and Practice, Kluwer/Plenum Publications, New York, 2001. (This 950 page book has been written, compiled and edited by myself.

### **Chapter Contribution:**

1- A chapter on "Nonuniform Sampling" plus contribution to the bibliography for the book edited by Prof. Robert Marks on Advanced Topics in Shannon Sampling and Interpolation Theory, New York: Springer Verlag, Jan. 1993.

2- A chapter on "Fast Packet Network: Data, Image, and Voice Signal Recovery" for Encyclopaedia of Telecommunications, Marcel Dekker, Inc., Jan 1994.

3- M.Azghani, F.Marvasti," Sparse Signal Processing," to be published in the Applied and Numerical Harmonic Analysis Series (Springer-Verlag) under the title "New Perspectives on Approximation and Sampling Theory ,"2014.

### **Translation**

F. Marvasti, A. Zolfaghari, Communication Systems by Bruce Carlson, 1979

## **PATENTS**

1- Error concealment or correction of speech, image and video signals, European patent (no. 1 006 665) was granted on 28th May 2003 and the US patent (no. 6 601 206) issued on 29th July 2003.

2- "A/D Converters Based on Signal Delta Modulators and Iterative" Application Number: 11/829,891, Date: 28/07/2008, United States Patent & Trademark Office.

3- O. Mashayekhi, F. Marvasti, "Uniquely Decodable Codes and Decoder for Overloaded Synchronous CDMA Systems" Application Number: 13/082,084, Date: 08/12/2013, United States Patent & Trademark Office.

## **JOURNAL PAPERS**

1. Mohammad Sedaghat, Peter. Muller, Farokh Marvasti, "Performance Analysis of Asynchronous Optical CDMA with Spectral-Amplitude-Coding," IET Communications, Vol. 8, No. 6, 2014.

2. Mohammad Ali Akhaee, Farokh Marvasti, "A Survey on Digital Data Hiding Schemes:

Principals, Algorithms, and Applications," ISeCure, Vol.5, No. 1, pp. 1-32, January 2013.

3. Tongyang Xu; Ryan Grammenos; Farokh Marvasti; Izzat Dawarzeh; " An Improved Fixed Sphere Decoder Employing Soft Decision for the Detection of Non-orthogonal Signals," IEEE Communications Letters, Vol. 17, No. 10, 2013.
4. P. Kabir, M. H. Shafinia, F. Marvasti, "Capacity Bound of Finite Dimensional CDMA Systems with Power Allocation, Fading, and Near-Far Effects", IEEE Communications Letters, Vol. 17, No. 1, 2013.
5. M. A. Sedaghat, S. A. Nezamalhosseini, H. Saeedi, and F. Marvasti, "Belief Propagation Based Multiuser Receivers in Optical CDMA Systems," Accepted for publication in IET Communications, 2013.
6. S. Dashmiz, M. R. Takapoui, S. Moazeni, M. Moharrami, M. Abolhasani, F. Marvasti, "Generalization of CDMA Systems and Derivation of New Bounds for the Sum Capacity," IET Communications, 2013.
7. S. A. Nezamalhosseini, Lawrence R. Chen, Qunbi Zhuge, Mahdi Malekiha, Farokh Marvasti, and David V. Plant, "Theoretical and experimental investigation of direct detection optical OFDM transmission using beat interference cancellation receiver," Optics Express, vol. 21, no. 13, pp. 15237-15246, July 2013.
8. S. Alireza Nezamalhosseini, M. Rezagholipour Dizaji, Kerim Fouli, Lawrence R. Chen, and Farokh Marvasti, "Novel FWM-Based SAC Label Recognition for Optical Packet-Switched Networks," IEEE Photonics Journal, vol. 5, no. 4, 2013.
9. Hamzeh Beyranvand, S. Alireza Nezamalhosseini, Jawad A. Salehi, and Farokh Marvasti, "Performance Analyses of Equal-Energy Two-Level OCDMA System Using Generalized Optical Orthogonal Codes," Optical Express journal, Vol. 31, No.10, pp.1573-1584, 2013.
10. Hossein Hosseini and Farokh Marvasti, "Fast Restoration of Natural Images Corrupted by High-Density Impulse Noise," EURASIP Journal on Image and Video Processing, 2013.
11. Mohsen Heidari Khoozani, Farokh Marvasti, Masoumeh Azghani, Mona Ghassemian, "On Finding Sub-optimum Signature Matrices for Overloaded CDMA Systems," in IET Journal of Communications, Nov 2012.
12. K. Alishahi, S. Dashmiz, P. Pad, and F. Marvasti, " Design of Signature Sequences for Overloaded CDMA and Bounds on the Sum Capacity with Arbitrary Symbol Alphabets," IEEE Transactions on Information Theory, vol. 58, pp. 1441-1469, 2012.
13. M. Ferdosizadeh Naeiny and F. Marvasti, "Iterative Clipping Recovery in Spatially Multiplexed OFDM Systems," Scientia Iranica, vol. 19, pp. 739-744, 2012.
14. A. Amini, A. Karbasi, and F. Marvasti, "Low-Rank Matrix Approximation using Point-Wise Operators," IEEE Transactions on Information Theory, vol. 58, pp. 302-310, 2012.
15. Amini, V. Montazerhodjat, and F. Marvasti, "Matrices with Small Coherence using p-ary block codes," IEEE Transactions on Signal Processing, vol. 60, pp. 172-181, 2012.

16. R. Madani, A. Ayremlou, A. Amini, and F. Marvasti, "Optimized Compact-Support Interpolation Kernels," *IEEE Transactions on Signal Processing*, vol. 60, pp. 626-633, 2012.
17. F. Marvasti, A. Amini, F. Haddadi, M. Soltanolkotabi, B. Khalaj, A. Aldroubi, S. Sanei, and J. Chmbers, "A Unied Approach to Sparse Signal Processing," *EURASIP Journal on Advances in Signal Processing*, 2012.
18. A. Parandehgheibi, A. Ayremlou, M. A. Akhaee, and F. Marvasti, "Improved Iterative Techniques to Compensate for Interpolation Distortions," *Signal Processing*, vol. 92, pp. 963-976, 2012.
19. Alireza Nezamalhoseini, Farokh Marvasti, Babak Ghafari, Jawad Salehi, "Interference Cancellation in Optical CDMA Systems via Advanced Binary Optical Logic Gate Elements," *IEEE Communications Magazine*, Vol. 50, No. 8, 2012.
20. K. Alishahi, S. Dashmiz, P. Pad, F. Marvasti, "Design of overloaded CDMA and the derivation of sum capacity bounds for synchronous CDMA systems", *IEEE Trans. on Information Theory*, 2011.
21. S. Amir Hossein Hosseini, Omid Javidbakht, Pedram Pad, and Farokh. Marvasti, "A Review on Synchronous CDMA Systems: Optimum Overloaded Codes, Channel Capacity, and Power Control," *EURASIP Journal on Wireless Communications and Networking*, 2011.
22. Mohammad Mehdi Kafashan, Sajjad Beygi, Farokh. Marvasti, "Asynchronous Analog to Digital Converter Based on Level Crossing Sampling Scheme," *Eurasip Journal on Advances in Signal Processing*, 2011.
23. M. F. Naeiny and F. Marvasti, "Selected Mapping Algorithm for PAPR Reduction of Space-Frequency Coded OFDM Systems without Side Information," *IEEE Transactions on Vehicular Technology*, vol. 60, pp. 1211-1216, 2011.
24. P. Pakrroh, A. Amini, and F. Marvasti, "OFDM Pilot Allocation for Sparse Channel Estimation " *Eurasip Journal on Advances in Signal Processing*, 2011.
25. A. Amini, F. Marvasti, "Deterministic RIP-Fulfilling Matrices Using p-ary Block Codes," *IEEE Transactions on Signal Processing*, 2011.
26. Amini, F. Marvasti, "Deterministic Construction of Binary, Bipolar and Ternary Compressed Sensing Matrices," *IEEE Transactions on Information Theory*, 2011.
27. P. Pad, A. Mosavi, A. Goli, F. Marvasti, "Simplified MAP-MUD for Active User CDMA," *IEEE Communications Letters*, 2011.
28. Arash Amini, Michael Unser, Farokh Marvasti, "Compressibility of Deterministic and Random Infinite Sequences," *IEEE Transactions on Signal Processing*, Vol. 59, No. 11, 2011.
29. A. Haghi, R. Khosravi, M. R. Aref, F. Marvasti, "The Capacity Region of p-Transmitter/q-Receiver Multiple-Access Channels with Common Information," *IEEE Transactions on Information Theory*, 2011.
30. R. Dianat, F. Marvasti, "Linear Estimation of Stationary Autoregressive Processes," *Signal Processing*, 2011.

31. M. Ferdosizadeh, F. Marvasti, "PAPR Reduction of Space-Frequency Coded OFDM Systems Using Active Constellation Extension," *AEU-International Journal of Electronics and Communications*, 2011.
32. M. Ferdosizadeh, A. Jafarnia, F. Marvasti, "Modified Active Constellation Extension for PAPR Reduction of Space-Frequency Coded OFDM Systems," *Scientia Iranica*, 2010.
33. M. Ferdosizadeh, A. Jafarnia, F. Marvasti, "Metric Based Symbol Predistortion for Peak Power Reduction of Space Frequency Coded OFDM Systems," *IEEE Transactions on Consumer Electronics*, 2010.
34. Mohammad A. Akhaee, Nima Khademi Kalantari, Farokh Marvasti, "Robust Audio and Speech Watermarking Using Gaussian and Laplacian Modeling Signal Processing," Elsevier, 2010.
35. Pedram Pad, Mohammad Javad Faraji, Farokh Marvasti, "Constructing and Decoding GWBE Codes Using Kronecker Products," *IEEE Communications Letters*, 2009.
36. Sina Zahedpour, Soheil Feizi, Arash Amini, Mahmoud Ferdosizadeh, Farokh Marvasti, "Impulsive Noise Cancellation Based on Soft Decision and Recursion," *IEEE Transactions on Instrumentation and Measurement*, Vol.58, No. 8, August 2009.
37. Mohammad A. Akhaee, , Mohammad J. Saberian, Soheil Feizi, Farokh Marvasti, "Robust Audio Data Hiding Using Correlated Quantization With Histogram-Based Detector," *IEEE Transactions on Multimedia*, 2009.
38. Mohammad A. Akhaee, S.Mohammad.E. Sahraeian, Farokh. Marvasti, "Contourlet Based Image Watermarking Using Optimum Detector in the Noisy Environment," *IEEE Transactions on Image Processing*, 2009.
39. Kasra Alishahi, Farokh Marvasti, Vahid Aref, pedram Pad, "Bounds on the Sum Capacity of Synchronous Binary CDMA Channels," *IEEE Transactions on Information Theory*, 2009.
40. M. Ghavami, A. Amini, F, Marvasti, "Unified Structure of Basic UWB Waveforms," *IEEE Transactions on Circuits and Systems II*, 2009.
41. M. Ghaffari, B. Hariri, S. Shirmohammadi, F. Marvasti, "On the Necessity of Using Delaunay Triangulation Substrate in Greedy Routing Based Networks," *IEEE Communications Letters*, 2009.
42. Mohammad Emadi, KH Sadeghi, A Jafargholi, Farokh Marvasti, "Co. Channel Interference Cancellation by The USE of Iterative Digital Beam Forming Method," *Progress In Electromagnetics Research*, 2009.
43. Mohammad Emadi, A Jafargholi, MHS Moghadam, Farokh Marvasti, "New Anti-Arm Technique by Using Random Phase and Amplitude Active Decoys," *Progress In Electromagnetics Research*, 2009.
44. Ruhallah AliHemmati<sup>1</sup>, Paeiz Azmi, Farokh Marvasti, "Joint Multi-User Interference and Clipping Noise Cancellation in Uplink MC-CDMA System," *AEU Int. J. Electron. Commun*, 2009.

45. Pedram Pad, Farokh Marvasti, Kasra Alishahi, S. Akbari, "A Class of Errorless Codes for Over-loaded Synchronous Wireless and Optical CDMA Systems and Evaluation of Channel Capacity Bounds," IEEE Information Theory Society, 2009.
46. Mohammad Ghavami, Arash Amini, Farokh Marvasti, "Unified Structure of Basic UWB Waveforms," IEEE Transactions on Circuits and Systems—II, Volume: 55, Issue: 12, 2008.
47. Mohammad A. Akhaee, M. J. Saberian, Soheil Feizi, Farokh Marvasti, "Robust Audio Data Hiding Using Correlated Quantization with Histogram Based Detector," IEEE Transactions on Multimedia, 2008.
48. Mohammad A. Akhaee, S. Mohammad E. Sahraeian, Bulank Sankur, Farokh Marvasti, "Salt and Pepper Noise Removal for Image," IEEE Transactions on Multimedia, 2008.
49. Mohammad A. Akhaee, S. Mohammad E. Sahraeian, Bulank Sankur, Farokh Marvasti, "Robust Scaling Based Image Watermarking Using Maximum Likelihood Decoder with Optimum Strength Factor," IEEE Transactions on Multimedia, 2008.
50. Mohammad A. Akhaee, S. Mohammad E. Sahraeian, Farokh Marvasti, "Contourlet Based Image Watermarking Using Optimum Detector in a Noisy Environment," IEEE Transactions on Image Processing, 2008.
51. Sina Zahedpour, Soheil Feizi, Arash Amini, Mahmoud Ferdosizadeh, Farokh Marvasti, "Impulsive Noise Cancellation Based on Soft Decision and Recursion," IEEE Transactions on Instrumentation, 2008.
52. Mohmoud Ghandi, Mohammad M Jahannai, Farokh Marvasti, "Some Nonlinear/Adaptive Methods for Fast Recovery of the Missing Samples of Signals," Elsevier Signal Processing, 2007.
53. Reza Dianat, Farokh Marvasti, M Ghanbari, "Reliable Video Transmission Using Near Capacity Limit Codes," IEEE Trans on Circuits and Systems for Video Technology, Vol. 16, No. 12, PP. 1550-1556, December 2006.
54. Reza Dianat, M Ghanbari, Farokh Marvasti, "Low Bit-rate Hybrid Wavelet-DCT Video Codec," IEEE Transactions in Circuits and Systems for Video Technology (TCSV), 2005.
55. Paeiz Azmi, Farokh Marvasti, "Robust Decoding of DFT-Based Error Control Codes for Impulsive and Additive White Gaussian Noise Channels," Proceedings of IEE in Communications, 2005.
56. Paeiz Azmi, Farokh Marvasti, "A Novel Iterative Decoding Method for DFT Codes in Erasure Channels," IEICE Trans. On Com, Vol. E 87/B No.11, 2004.
57. Paeiz Azmi, Farokh Marvasti, "Robust Decoding of DFT-Based Error Control Codes for Impulsive and Additive White Gaussian Noise Channels," Proceedings of IEE in Communications, 2004.
58. Reza Dianat, Farokh Marvasti, "FFT-Based Fast Reed-Solomon Codes with Arbitrary Block-Lengths and Rates," Proceedings of IEE in Communications, 2004.
59. Paeiz Azmi, Farokh Marvasti, "A Pseudo-Inverse Based Iterative Decoding Method

for DFT Codes in Erasure Channels," IEICE Transactions on Communications E87B (10): 3092-3095 OCT. 2004.

60. Paeiz Azmi, D. Meleas, Farokh Marvasti, "An Efficient Method for Demodulating PPM Signals Based on Reed-Solomon Decoding Algorithm," Signal Processing 84 (10): 1823-1836, OCT. 2004.
61. Reza Dianat, Farokh Marvasti, Paeiz Azmi, Siamak Talebi, "New Vector Quantization-Based Techniques for Reducing the Effect of Channel Noise in Image Transmission," Signal Processing 84 (11): 2153-2163, NOV. 2004.
62. Paeiz Azmi, Farokh Marvasti, "An Efficient Method for Demodulating PPM Signals Based on Reed-Solomon Decoding Algorithm," SIGNAL PROCESSING 84 (10): 1823-1836 OCT 2004.
63. S. Marvasti, D. Gillies, F. Marvasti And H. S. Markus , "Online automated detection of cerebral embolic signals Using a wavelet-based system," Ultrasound in Med. & Biol., Vol. 30, No. 5, pp. 647-653, 2004
64. N Aydin, F Marvasti, and H Markus, "Embolic Doppler Ultrasound Signal Detection Using Discrete Wavelet Transform," IEEE Transactions on Information Technology in Bio-Medicine, 8 (2): 182-190 JUN 2004.
65. H. Saeedi, P. Azmi, and F. Marvasti, "Performance Comparison of a Novel DFT-Based Method and Conventional Channel Coding Methods for Clipping Noise Cancellation in OFDM Systems", IEICE Trans. on Com, vol. E87-B, no. , pp 1034-1036. Feb 2004.
66. P. Azmi, and F. Marvasti, "Comparison Between Several Methods of Signal Reconstruction from Irregularly Spaced Samples", International Journal of Sampling Theory in Signal and Image Processing, vol.1, no. 3, pp. 207-224, Sept. 2002.
67. H. Saeedi, M. Sharif and F Marvasti, "Clipping Noise Cancellation in OFDM Systems Using Oversampled Signal Reconstruction," IEEE Communication Letters, vol. 6, no. 2, pp. 73-75, Feb. 2002.
68. T. Nikiolaidis, M. Hasan and F. Marvasti, "Error Resilient Two-layer H.263-based Codecs for ATM Environments," Real-Time Imaging, Academic Press, Issue 7/3, June 2001.
69. M. Hasan and F. Marvasti, "Efficient Rank-Ordered Mean (ROM) Techniques for Isolated Recovery in Highly Corrupted Images", IEEE Communication Letters, Vol. 4, no. 10, pp. 321-322, Oct. 2000.
70. M.R. Nakhai, and F Marvasti, "A Hybrid Speech Coder Based on CELP and Sinusoidal Coding," IECE Trans of Japan, vol, no, pp, 1999.
71. F. Marvasti, M. Hasan, M. Eckhart, S Talebi, "Efficient Algorithms for Burst Error Recovery Using FFT and Other Transform Kernels," IEEE Trans on Signal Processing, vol 47, no 4, April 1999.
72. A. Sharaf and F. Marvasti, "Motion Compensation Using Spatial Transformations with Forward Mapping," Signal Processing: Image Communications, vol 14, no 3 , pp.209-227 January 1999.

73. Sharaf and F. Marvasti, "A note on "Block Wavelet Transform for Image Compression," IEEE Trans. on CAS for Video Tech., vol 6, no. 4, p 422, August 1996.
74. F. Marvasti, " Nonuniform Sampling Theorems for bandpass signals at or Below the Nyquist Rate density," IEEE Trans on SP, vol pp. 572-576, March 1996.
75. F. Marvasti, "Interpolation of low pass signals at half the Nyquist rate," IEEE Journal on Signal Processing Letters, vol. 3, no.2, pp. 42-43, February 1996.
76. F. Marvasti, "Reply to "Comment on Parseval Relationship of Nonuniform Samples of One-and Two-Dimensional Signals," IEEE Trans on SP, vol 43, Issue 12, Dec. 1995.
77. C.K.W. Wong, F. Marvasti and W.G. Chambers, "Implementation of recovery of speech with impulsive noise on a DSP chip," IEE Electronics Letters, vol. 31, no.17, pp. 1412-1413., 17 Aug, 1995.
78. F. Marvasti, C. Liu and G. Adams, "Spectral Analysis of Irregular Samples of Multi-Dimensional Signals," IEICE Trans. on Fundamentals of Electronics, Commun. and Computer Sciences, Section E, Feb. 1994.
79. M. Nafie and F. Marvasti, "Implementation of Recovery of Speech with Missing Samples on a DSP Chip," Electronic Letters, Vol 30, Issue 1, Jan 6, 1994.
80. F. Marvasti, C. Liu and G. Adams, "Analysis and Recovery of Multidimensional Signals from Irregular Samples Using Nonlinear and Iterative Techniques," Signal Processing, vol 36, issue 1, pp 13-30, March 1994.
81. F. Marvasti, "Using FFT for Error Correction Decoders," IEICE of Japan, on Fundamentals of Electronics, Commun. and Computer Sciences, Section E, vol.E76-A, no.11, November 1993.
82. F. Marvasti and M. Nafie, "Sampling Theorem: A Unified Outlook on Information Theory, Block and Convolutional Codes," Special Issue on Information Theory and its Applications, IEICE Trans. of Japan on Fundamentals of Electronics, Commun. and Computer Sciences , Section E, Sept. 1993.
83. F. Marvasti and C. Liu, "Feedback Implementation of Signal Recovery from Nonuniform Samples," Electronic Letters, Issue 1, 7th of Jan. 1993, pp. 78-80.
84. F. Marvasti, P. Clarkson, M. Dokic, L. Chuande, "Reconstruction of Speech Signals from Lost Samples," IEEE Trans. on Acoustic, Speech, and Signal Processing, vol 40, no. 12, Dec. 1992, pp. 2897-2903.
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## **CHAIRING AND ORGANIZING CONFERENCES**

Technical Chairman and Founder of SampTA 95-Present. This conference is held every 2 years in different countries.

Technical Chairman and Founder of ICT 94-Present, this conference is held every year in different countries.

Technical Chairman and Founder of IST2001-Present, this conference is held every 2 years in Iran.

Founder of Electric Power Workshop 82-Present, this conference is held every year by the Electric Power Research Center of the Ministry of Energy.

Organizer of Information Theory Workshop 2010.

Co-Chair of IWCIT 2012, This conference is held every year in Iran.

Technical Chairman of the Mini-Conference on Communication Theory, Globecom' 96, Nov, 1996.

Member of the Technical Committee of the International Symposium on Digital Signal Processing, London 22-25 July 1996.

Member of the Technical Committee of the International Conference on Telecommunications, ICT'96, Istanbul, March 25-28, 1996.

Technical Chairman and Founder of the Workshop on Sampling Theory and Applications, SampTA' 95, Riga, Latvia Sept 20-22, 1995.

Vice Chairman of the International Conference on Telecommunications, ICT' 95, Bali, Indonesia, April 3-7, 1995.

Technical Program Representative of Signal Processing and Communication Electronics Group of IEEE to Globecom' 95, Singapore, Nov, 1995 will also chair a session on Speech and Video Coding.

Technical Program Representative of Signal Processing and Communication Electronics Group of IEEE to the International Conference on Communications, ICT' 95.

Technical Program Representative of Communications Theory Group of IEEE to the GLOBECOM' 94, Nov 1994, also chaired a session on Speech and Video Coding on the same conference.

Chairman of the Technical Committee of the International Conference on Telecommunications, ICT'94, Dubai, UAE, Jan 10-12, 1994.

Organizer and Chairman of the Session on Speech and Video Compression, ICC'93, Geneva, Switzerland, May 23-26, 1993.

Organizer and Chairman of the Session on Application of Signal Processing to Error Correction Codes, Chicago, IL, ICC/SUPERCOMM '92.

Representative of Signal Processing and Communication Electronics to the International Conference on Communications, Chicago, IL, ICC/SUPERCOMM '92.

Organizer and Chairman of the Minisymposium on Nonuniform sampling Theory and Reconstruction Methods at International Conference on Industrial and Applied Mathematics, ICIAM'91, Washington, D.C., July 1991.

Organizer and Chairman of Advanced Modulation and Coding Session for IEEE Conference on MILCOM, Monterey, CA, Sept. 1990.

Organizer of the Minisymposium on Sampling Theory and Practice at SIAM Annual Meeting, Chicago, IL, July 1990.

Organizer and Chairman of the Minisymposium on Nonuniform Sampling of 2-D Signals at SIAM Annual Meeting, San Diego, CA., July 1989.

Organizer and Chairman of the Minisymposium on Zero-Crossings and Nonuniform Sampling of Signals and Systems at SIAM Annual Meeting, Minneapolis, MN., July 1988.

Initiator and organizer of the first Third World Electric Power Conference TEPCON' Teheran, Iran, 1984.

Organizer and chairman of a National Electronic and Communication Symposium (1000 people), Teheran, Iran June 1980.

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  124. S. M. E. Saheaeian, M. A. Akhaee, F. Marvasti, "Blind Image Watermarking Based on Sample Rotation with Optimal Detector," 17th European Signal Processing conference (EUSIPCO), Glasgow, Scotland, UK, August 24-28, 2009.
  125. M. Soltanolkotabi, A. Amini, and F. Marvasti, "OFDM Channel Estimation based on Adaptive Thresholding for Sparse Signal Detection," 17th European Signal Processing conference (EUSIPCO), Glasgow, Scotland, UK, August 24-28, 2009.
  126. A. Ameri-Mahabadi, M. A. Akhaee, F. Marvasti, "Semi-Reversible Quantization Based Watermarking Using Missing Samples Recovery Technique," International Conference on Telecommunication (ICT), Morocco, July 26-30, 2009.
  127. M. Soltanolkotabi, M. Soltanalian, A. Amini, and F. Marvasti, "A Practical Sparse Channel Estimation for Current OFDM Standards," International Conference on Telecommunication (ICT), Morocco, July 26-30, 2009.
  128. A. ParandehGheibi, M. A. Rahimian, M. A. Akhaee, A. Ayremlou, F. Marvasti, "Compensating for Distortions in Interpolation of Two-Dimensional Signals Using Improved Iterative Techniques," ICT2010, Qatar, 4-7 April, 2010.
  129. Arash Amini, Vahid Montazerhodjat, Farokh Marvasti, "RIP-fulfilling Complex-Valued Matrices," ICC2010, South Africa, 23-27 May, 2010.

130. M. H. Shafinia, P. Kabir, P. Pad, S. M. Mansouri, F. Marvasti, "Errorless Codes For CDMA Systems with Near-Far Effect," ICC2010, South Africa, 23-27 May, 2010.
131. Sajjad Beygi Harchegani, mohammad.kafashan, Farokh Marvasti, "Impulsive Noise Removal from Images Using Sparse Representation and Optimization Methods," ISSPA2010, Malaysia, 2010.
132. Ali Haghi, Reza. Khosravi-Farsani, Mohammad. R. Aref, and Farrokh. Marvasti, "The Capacity Region of Fading Multiple Access Channels with Cooperative Encoders and Partial CSIT," ISIT2010, Austin,USA, 2010.
133. Sh. Dashmiz, M. R. Takapoui, P. Pad, F. Marvasti, "New Bounds for the Sum Capacity of Binary and Nonbinary Synchronous CDMA Systems," ISIT2010, Austin,USA, 2010.
134. M. A. Akhaee, A. Amini, G. Ghorbani, F. Marvasti, "A Solution to Gain Attack on Watermarking Systems: Logarithmic Homogeneous Rational Dither Modulation," ICASSP 2010, Dalas, USA, March 14-19, 2010.
135. S. Jafarzadeh, M. Khatami, and F. Marvasti, "Decoding Real Numbered Block and Convolutional Codes with Erasure and Impulsive Noise Channels," Eusipco2010, Aalborg, Denmark, August 23-27, 2010.
136. Neda B.Marvasti, F.Marvasti, Ali Pourmohammad, "Image Inpainting Using Iterative Methods," ICSPCS2010, Gold Coast, Australia, 13-15, 2010.
137. Neda B.Marvasti, F.Marvasti, Ali Pourmohammad, "Image Inpainting Using Iterative Methods," ICSPCS2011.
138. Reza Khosravi Farsani, Farokh Marvasti, "Capacity Bound for Multiuser Channels with Non-Causal Channel State Information at the Transmitters," IEEE Information Theory Workshop (ITW) 2011, Brazil, 2011.
139. Ramtin Madani, Ali Ayremlou, Arash Amini, Farokh Marvasti, "Optimized Spline Interpolation," Sampta 2011, Singapore, May 2011.
140. Masoumeh Azghani, Farokh Marvasti, "Progressive Sparse Image Sensing using Iterative Methods," the 2012 sixth International Symposium on Telecommunications (IST2012) in Tehran, on, Iran, on November 6th-8<sup>th</sup> , 2012
141. Abbasali Makhdoumi Kakhaki, Hossein Karkeh Abadi, Pedram Pad, Hamid Saeedi, Farokh Marvasti, Kasra Alishahi, "Achieving Linear Codes with Random Binary Sparse Generating Matrices over the Binary Symmetric Channel," ISIT 2012, Cambridge, MA, USA, July 11-6 2012..
142. M. Sedaghat, A. Nezamalhosseini, F. Marvasti, "Detecting Matrices for Random CDMA Systems," 20<sup>th</sup> International Conference on Telecommunications (ICT 2013), Casablanca, Morocco, 6-8 May 2013.
143. Alireza Nezamalhosseini, Mohammad Ali Sedaghat; Mona Ghassemian, Farokh Marvasti, "Interference Cancellation of overloaded Optical CDMA Systems Using Unipolar Walsh Codes," 20<sup>th</sup> International Conference on Telecommunications (ICT 2013), Casablanca, Morocco, 6-8 May 2013.

144. Masoumeh Azghani, Farokh Marvasti, "Iterative Method for Random Sampling and Compressed Sensing Recovery," SAMPTA 2013, Bremen, Germany, 1-5 July, 2013.
145. S. A. Nezamalhosseini, Lawrence R. Chen, Qunbi Zhuge, Mahdi Malekiha, Farokh Marvasti, and David V. Plant, "A Novel Receiver for Spectrally Efficient Direct Detection Optical OFDM", IEEE Photonics Conference, 8-12 September 2013, Bellevue, WA.
146. S. Alireza Nezamalhosseini, M. Rezagholipour Dizaji, Kerim Fouli, Lawrence R. Chen, and Farokh Marvasti, "FWM-Based SAC Label Recognition for Optical Packet Switched Networks", IEEE Photonics Conference, 8-12 September 2013, Bellevue, WA.
147. Seyed Javad Heydari Khormizi, Mahmoud Ferdosizadeh, Farokh Marvasti, "Iterative Detection with SoftDecision in Spectrally Efficient FDM Systems," WCSP 2014.

## **REPORTS**

The report on comparative study on convolutional codes and Reed Solomon codes for Singer Kearfott Co. became a referenced document for managers and engineers at that Company and Department of Defense.

Initiated and wrote a White Paper with other experts at Bell Labs. on Wideband Packet Technology. The report is widely read by Members of Technical Staff, Supervisors, and Directors.

The Feature Specification Document (FSD) on Operator Systems for Bell Operating Companies is the result of one year of research. Now, many Bell Operator Companies have implemented this system. Soon, all Bell Companies have their own operator systems based on this FSD.

The Feature Specification Document on Remote Switching Module (RSM) for 5ESS telephone switches has already been implemented. This feature has extended the RSM from 150 miles to 1000 miles.

Differential Phase Detectors, Air Force Themis Project, R.P.I., N.Y., 1971.

An Adaptive Quantizer, AFSC Project, R.P.I., Troy, N.Y., 1972.

Line Skipping Digital Facsimile Machine, Graphic Sciences Inc., Danbury, Ct., 1973.

Run Length Coding, Graphic Sciences, Inc., Danbury, Ct., 1973.

Analysis and Comparison of Error Correction Codes, Singer Co., Kearfott Division, N.J., 1974.

The Implementation of a Viterbi Decoder, Sharif University of Technology, 1978.

Economic and Technical Analysis of Wideband Packet Technology, AT&T Bell Labs., Naperville, IL, 1985.

Integrated Services Hybrid Network, AT&T Bell Labs, Naperville, IL., 1986.

Requirements on Equipment Maintenance of Adjunct Packet Cross-Connect Switch, AT&T Bell Labs., Naperville, Il., 1986.

Wideband Packet Network - White Paper, AT&T Bell Labs., Naperville, Il., 1986.

OSPS Feature Specification Document: Line Information Data Base (LIDB) Interface, Internal Memorandum, AT&T Bell Labs., Document No. 55116-870415-01IM, 1987.

Discussion on BellCore Transactions Capability Application Part of SS7 (TCAP) Layer for Line Information Data Base (LIDB) Applications, internal Memorandum, AT&T Bell Labs, Document no. 55116-8703101M, 1987.

Wideband Packet Technology: Exploratory Directions and Issues, Internal Memorandum, AT&T Bell Labs., Document no. 55116-870408-01 IM, 1987.

OSPS Feature Specification Document: Remote Switching Module (RSM) -Bridging, Internal Memorandum, AT&T Bell Labs, FSD no. 01-12 (Dept. 55116), 1987.

OSPS Discussion on Signalling Connection Control Part (SCCP) Layer of Signalling Systems 7 (SS7) for Line Information Data Base (LIDB) Application and My Correspondence with BellCore, Internal Memorandum, AT&T Bell Labs., Document no. 55116-870414-01 IM, 1987.

Zero-Crossing Based Evaluation of Atrial Fibrillation and Sinus Rhythm Signals - A Preliminary Report Prepared for the Pritzker Institute of Medical Engineering, 1988.

## **COURSES TAUGHT**

Courses Taught at Illinois Institute of Technology, University of California- Davis, AT&T Bell Labs., Sharif University of Technology and Tehran Polytechnic:

Signals and Systems- Undergraduate Level

Digital Communications- Undergraduate and Graduate Level

Communication Systems- Undergraduate Level

Analog Communication Systems- Undergraduate and Graduate Level

Digital Signal Processing- Undergraduate and Graduate Level

Information Theory- Graduate Level

Random Processes, Graduate Level

DSP II, Graduate Level

Coding Theory- Graduate Level

Special Topics in Modern Communication Systems. Undergraduate Level

Telecommunication Networks and Telephone Switching- Undergraduate Level

Communication Systems Lab.- Undergraduate Level  
(I developed experiments and wrote a manual for this Lab.)

Instrumentation and Measurement- Undergraduate Level

Instrumentation Lab.- Undergraduate Level

Electronic Telephone Switching- Graduate Level

Fields and Waves- Undergraduate

## **SHORT COURSES**

A short course has been offered at King's College on "Data Compression for Voice, Image, and Video Signals," April 1993, August 1993, April and Nov. 1994.

A short course offered at GEC-Plessy on "Data Compression on for Voice, Image, and Video Signals 6-9 Sept. 1993.

Two short courses on "Speech and Video Compression Techniques for Mobile and Satellite Applications" offered at Univ. of Westminster, London, UK. April 1994

A short course at IEEE Conf. ICC'94 held in New Orleans, US, May 1994

A short course at Globecom'94 to be held in San Francisco, US., Nov 1994

A short course at ICT'95, Bali, Indonesia, March 1995

A short course at ICT'96, Melbourne, Australia, Jan 1996

A short course on Multimedia at ICC'96, Dallas, Texas, June 1996.

A short course at ICC'96, US., June 1996.

A course on Data Compression at Institute of Radio-Electronics, Warsaw University of Technology, Warsaw, Poland May 26-27, 1997.

A short Course at Norsig'2004 in Finland on Non-uniform Sampling, June 2004.

## **INVITED LECTURES**

Invited Talks on "Sparse signal Processing" at Supelec (France), EPFL (Switzerland), University College London(UCL), King's College London, Imperial College, Queen Mary University, Brunel University while on sabbatical during 2012-2013.

University of Helsinki and Tampere University in Finland, Lectures on Nonuniform Sampling at January 2004.

Lancaster University in UK, "Signal Processing as an Alternative to Error Correction Codes," March 1993.

Bradford University in UK, "Video Compression Techniques," June 1993.

University College London, "Sampling and Information Theory," Oct. 1993.

## **STUDENTS**

About 15 PhD and 100 MSc students have received their degrees under my supervision.