Hoda Roodaki Lavasani
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Computer Engineering Department,
K. N. Toosi University of Technology,
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Education:

	PhD in Computer Engineering, Major in Computer Architecture School of Electrical and Computer Engineering, College of Engineering, University of Tehran, Tehran, Iran, 2014 **Thesis:** An Adaptive Framework for Scalable Multi-view Video Coding in H.264/AVC Standard Supervised by Dr. Mahmoud Reza Hashemi
	Master of Science in Computer Engineering, Major in Computer Architecture Department of Computer Engineering, Sharif University of Technology, Tehran, Iran, 2007 **Thesis:** Performance Enhancement of H.264 CODEC by Layered Coding Supervised by Hamid Reza Rabiee
	Bachelor of Science in Computer Engineering, Major in Computer Hardware, School of Electrical and Computer Engineering, College of Engineering, University of Tehran, Tehran, Iran, 2004 **Thesis:** Research on MPEG4 Standard and Multimedia System Supervised by Dr. Omid Fatemi

Research & Executive Experience:

	IRAN Telecommunication Research Center (ITRC) Tehran, Iran	Research Assistant *September 2014 – September 2015*
	Nokia Research Center Tampere, Finland	Research Assistant *September 2012 – December 2013*
	Digital Media Lab Department of Computer Engineering, Sharif University of Technology Tehran, Iran	Research Assistant *September 2007 – December 2009*
	Arman Optimized System Co. Tehran, Iran	Design, implementation and verification of a PCI Bus Interface Card for use in industrial automation *Summer – Fall 2003*
	Reviewer for IEEE Transactions on Circuits and Systems for Video Technology, ACM Transactions on Multimedia Computing, Communications, and Applications	

Research Interests:

	Point cloud video coding 360-degree video coding 3D and Multi-view video coding Scalable and error-resilient video coding Multimedia applications Cloud gaming

Publications:

Journal papers	[1] S. Shah Oveisi, H. Roodaki, M. Rezaalipour, M. Dehyadegari, "A power-efficient approximate approach to improve the computational complexity of coding tools in versatile video coding", Multimedia Tools and Applications, pp. 1-17, 2024. [2] H. Roodaki and M. N. Bojnordi, "Compressed Geometric Arrays for Point Cloud Processing," *IEEE Transactions on Multimedia*, doi: 10.1109/TMM.2022.3233256. [3] A. M. Ahrar, H. Roodaki, "A new tile boundary artifact removal method for tile-based viewport-adaptive streaming in 360◦ videos", Multimed Tools Appl 80, 29785–29803 (2021). [4] G. Zandi, H. Roodaki, S. Shirmohammadi, "A novel fast search method to find disparity vectors in multiview video coding", Multimed Tools Appl 80, 10821–10837 (2021). [5] A. Rezaeieh, H. Roodaki, "A Novel Approach to Improve Rate-Distortion-Complexity in Versatile Video Coding Standard", CSI Journal on Computer Science and Engineering, vol. 18, no. 1, Summer 2020. [6] Z. Hanoosh, H. Roodaki, "A Parallel Architecture for Motion Estimation in HEVC Encoder", CSI Journal on Computer Science and Engineering, vol. 15, no. 2, 2018 Pages 12-17. [7] M. Semsarzadeh, H. Roodaki, A. Aminlou, M.R. Hashemi, S. Shirmohammadi, "A Receiver Aware H.264/AVC Encoder for Decoder Complexity Control in Mobile Applications", Signal, Image and Video Processing, PP. 1–8, October 2016.

	[8] H. Roodaki, Z. Iravani, M. Hashemi, S. Shirmohammadi, "A View-level Rate-Distortion Model for Multi-view/3D Video", IEEE Transactions on Multimedia, Vol, Issue: 99, November 2015. [9] H. Roodaki, M.R. Hashemi, S. Shirmohammadi, "A New Methodology to Derive Objective Quality Assessment Metrics for Scalable Multi-view 3D Video Coding", ACM Transactions on Multimedia Computing, Communications, and Applications, Vol. 8, No. 3, September 2012. [10] H. Roodaki, H.R. Rabiee, M. Ghanbari, "Rate-distortion optimization of scalable video codecs", Elsevier Signal Processing: Image Communication, Vol. 25, Issue 4, April 2010.
Conference Papers	[1] H. Roodaki, M. Dehyadegari and M. N. Bojnordi, "G-Arrays: Geometric Arrays for Efficient Point Cloud Processing," ICASSP 2021 - 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2021, pp. 1925-1929, [2] R. Abolfathi, H. Roodaki, S. Shirmohammadi, "A Novel Rate Control Method for Free-viewpoint Video in MV-HEVC", 2019 International Conference on Computing, Networking and Communications (ICNC). [3] Z. Hanoosh, H. Roodaki, "A parallel architecture for motion estimation in HEVC encoder", JCSE Vol. 15, No. 2, Winter 2018. [4] B. Tajali, H. Roodaki, "HEVC-based view level rate-distortion model for multiview video", The 25th Iranian conference on Electrical Engineering (ICEE2017), Tehran, Iran, 2017. [5] H. Roodaki, S. Shirmohammadi, "Scalable Multiview Video Coding for Immersive Video Streaming Systems", International Conference on Visual Communications and Image Processing (VCIP), Chengdu, China, November 2016. [6] H. Roodaki, M.R. Hashemi, S. Shirmohammadi, "Rate-distortion Optimization for Scalable Multi-view Video Coding", IEEE International Conference on Multimedia and Expo (ICME), China, July 2014. [7] H. Roodaki, J. Lainema,"Efficient burst image compression using H.265/HEVC", Proceeding of SPIE 9030, Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications, San Francisco, California, USA, February 2014. [8] H. Roodaki, K. Ugur, M.M. Hannuksela, M. Gabbouj, "Efficient video resolution adaptation using scalable H.265/HEVC", 20th IEEE International Conference on Image Processing (ICIP), Melbourne, VIC, September 2013. [9] H. Roodaki, Z. Iravani, M.R. Hashemi, S. Shirmohammadi, M. Gabbouj, "A New Rate Distortion Model for Multi-view/3D video Coding", IEEE International Conference on Multimedia and Expo Workshops (ICMEW), San Jose, CA, July 2013. [10] H. Roodaki, M.R. Hashemi, S. Shirmohammadi, "New Scalable Modalities in Multi-view3D Video", ACM Workshop on Mobile Video (MOVID13), Oslo, Norway, February, 2013. [11] H. Roodaki, "An adaptive framework for scalable multi-view video coding for the H.264/AVC standard", Proceedings of the 20th ACM international conference on Multimedia, Japan, October – November 2012. [12] H. Roodaki, M.R. Hashemi, S. Shirmohammadi, "A New Scalable Multi-View Video Coding Configuration for Mobile Applications", IEEE International Conference on Multimedia and Expo (ICME), Barcelona, Spain, July 2011. [13] H. Roodaki, H.R. Rabiee, M. Ghanbari, "Performance enhancement of H.264 codec by layered coding", IEEE International Conference on Acoustics, Speech and Signal Processing, Las Vegas, NV, March-April 2008. [14] H. Roodaki, M.R. Hashemi, O. Fatemi, "A Frame Layer Bit Allocation for H.264 Based on Frame Complexity", Canadian Conference on Electrical and Computer Engineering, Ottawa, May 2006.
Technical Reports	[1] K. Ugur, H. Roodaki, M. M. Hannuksela, "Lightweight single-loop scalability with SHVC", *JCTVC-L0111*, Geneva, CH, 14–23 January 2013. [2] K. Ugur, H. Roodaki, M. M. Hannuksela, "Adaptive resolution change with SHVC", *JCTVC-L0119*, Geneva, CH, 14–23 January 2013. [3] K. Ugur, H. Roodaki, "On lossless coding with SHVC", *JCTVC-M0039*, Incheon, KR, 18–26 April 2013. [4] K. Ugur, H. Roodaki, M. M. Hannuksela, "AHG9: Using SHVC for adaptive resolution change and efficient trick mode", *JCTVC-M0040*, Incheon, KR, 18–26 April 2013. [5] M.M. Hannuksela, H. Roodaki, K. Misra, S. Deshpande "MV-HEVC/SHVC HLS: Indications related to single-loop decoding", *JCT3V-F0067*, Geneva, CH, 25 Oct. – 1 November 2013. [6] M.M. Hannuksela, H. Roodaki, "MV-HEVC/SHVC HLS: Header parameter set (HPS)", *JCT3V-G0139*, San Jose, US, 11–17 January 2014

Teaching:

	Microprocessor & Assembly Language Introduction to Multimedia Systems Hardware Software Co-design Low Power System Data Compression