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Computer Engineering Department,
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Education:

	<i>PhD in Computer Engineering, Major in Computer Architecture</i> 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
	<i>Master of Science in Computer Engineering, Major in Computer Architecture</i> 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
	<i>Bachelor of Science in Computer Engineering, Major in Computer Hardware,</i> 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 <i>September 2014 – September 2015</i>
	Nokia Research Center Tampere, Finland	Research Assistant <i>September 2012 – December 2013</i>
	Digital Media Lab Department of Computer Engineering, Sharif University of Technology Tehran, Iran	Research Assistant <i>September 2007 – December 2009</i>
	Arman Optimized System Co. Tehran, Iran	Design, implementation and verification of a PCI Bus Interface Card for use in industrial automation <i>Summer – Fall 2003</i>
	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
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Publications:

<i>Journal papers</i>	[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", <i>Multimedia Tools and Applications</i>, pp. 1-17, 2024. [2] H. Roodaki and M. N. Bojnordi, "Compressed Geometric Arrays for Point Cloud Processing," <i>IEEE Transactions on Multimedia</i>, 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", <i>Multimed Tools Appl</i> 80, 29785–29803 (2021). [4] G. Zandi, H. Roodaki, S. Shirmohammadi, "A novel fast search method to find disparity vectors in multiview video coding", <i>Multimed Tools Appl</i> 80, 10821–10837 (2021). [5] A. Rezaeieh, H. Roodaki, "A Novel Approach to Improve Rate-Distortion-Complexity in Versatile Video Coding Standard", <i>CSI Journal on Computer Science and Engineering</i>, vol. 18, no. 1, Summer 2020. [6] Z. Hanoosh, H. Roodaki, "A Parallel Architecture for Motion Estimation in HEVC Encoder", <i>CSI Journal on Computer Science and Engineering</i>, 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", <i>Signal, Image and Video Processing</i>, PP. 1–8, October 2016.
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	[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", <i>JCTVC-L0111</i>, Geneva, CH, 14–23 January 2013. [2] K. Ugur, H. Roodaki, M. M. Hannuksela, "Adaptive resolution change with SHVC", <i>JCTVC-L0119</i>, Geneva, CH, 14–23 January 2013. [3] K. Ugur, H. Roodaki, "On lossless coding with SHVC", <i>JCTVC-M0039</i>, 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", <i>JCTVC-M0040</i>, 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", <i>JCT3V-F0067</i>, Geneva, CH, 25 Oct. – 1 November 2013. [6] M.M. Hannuksela, H. Roodaki, "MV-HEVC/SHVC HLS: Header parameter set (HPS)", <i>JCT3V-G0139</i>, San Jose, US, 11–17 January 2014
Teaching:	
	Microprocessor & Assembly Language Introduction to Multimedia Systems Hardware Software Co-design Low Power System Data Compression