

Curriculum Vita

Eun-Seok Ryu

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PROFESSIONAL EXPERIENCE

Gachon University, Seongnam, Korea Mar 2015 - Current
<http://www.gachon.ac.kr>

Assistant Professor, Department of Computer Engineering, School of Information Technology

- Researching and leading projects on multimedia communications
- Laboratory: Multimedia Communications and Systems Lab (MCSL: <http://mcsl.gachon.ac.kr>).

Samsung Electronics, Suwon, Korea Mar 2014 – Feb 2015
<http://www.samsung.com>

Principal Engineer, Multimedia Part in Patent R&D Group, Technology Strategy Team, Mobile Communication Division

- (Director) Leading the multimedia part including two cells (Advanced technology cell, Enabling service cell)
- Researching on embedded video processing and communications technologies for cell phone
- Researching on multimedia with a smart assistant
- HEVC/SHVC/MMT

InterDigital Communications, San Diego, CA, US Jan 2011 – Feb 2014
<http://www.interdigital.com/>

Staff Engineer (from April 2011), Video Standard Research Team, Innovation Labs

- MPEG-H system: MMT (MPEG Media Transport) standard
- JCT-VC: HEVC (H.265) and Scalable HEVC (SHVC) standard
- Embedded multimedia SW development with HEVC.
- Video conferencing over LTE network: cross-layer video streaming using UEP technology
- Bandwidth-adaptive HTTP-based video streaming (DASH, HLS)

Georgia Institute of Technology, Atlanta, GA, US Sep 2008 – Dec 2010
<http://www.gatech.edu>

GCATT (Georgia Centers for Advanced Telecommunications Technology, Director: Prof. Nikil Jayant)

Postdoctoral Research Fellow; fully funded.

Project: *The Home Gateway for Three-Screen TV*

- Designed and implemented a Home Gateway platform over wireless network
- Implemented real-time H.264 SVC server and player (client) for IP-enabled devices

Korea University Seoul, Korea Mar 2008 - Aug 2008
<http://www.korea.edu>

Research Professor

- Researched embedded multimedia SW; H.264 MVC-based selective streaming technology to increase subjective video quality
- Researched selective H.264 SVC streaming technology for cell phone using ROI information
- Lectures : Embedded Multimedia Processing, Topics in Database

SungKyul University Anyang, Korea Mar 2004 - Feb 2007
<http://en.sungkyul.ac.kr>

Visiting Professor

- Lectures on embedded multimedia SW.

- Lectures : Multimedia Programming, Special Topics in Mobile, Introduction to Multimedia System, Computer Game

Thin Multimedia Seoul, Korea

July 2001 - Dec 2002

<http://www.thinmultimedia.com>

Senior Engineer

- Designed and Implemented a SW-based multimedia player for cell phone (Samsung, LG, Motorola, and Pantech with SK Telecom) using EVRC (speech) and TCM (video) Codecs and ARM core-based OMAP platform
- Implemented mobile multimedia streaming module over EVDO
- Ported and optimized MPEG-4 AAC on cell phone using C language

PROJECT EXPERIENCE

- ***Development of Healthcare for Senior with Artificial Intelligence Technology***, Jul. 2017 – Jun. 2020
 - (Collaborative research, PI: Prof. Taegkeun Whangbo, Department of Computer Engineering, Gachon University), Funded by Gyunggi Regional Research Center
 - Implementing video/audio processing module for chat-bot for health care system
- ***Development of Brain Disease Prediction/Prevention Technology using Medical Big Data and Human Resource Development Program***, Jun. 2017 – Dec. 2020
 - (Collaborative research, PI: Prof. Taegkeun Whangbo, Department of Computer Engineering, Gachon University), Funded by the Ministry of Science, ICT & Future Planning
 - Implementing video/audio processing module for chat-bot for health care system
- ***Reference SW Development for Viewport Dependent 360 Video Processing***, Jun. 2017 – Mar. 2018
 - [PI], Funded by LG Electronics Research
 - Implementing MCTS-related SW, Pre/post processing tools and VR viewer for 360 video processing
- ***Development of Tiled Streaming Technology For High Quality VR Contents Real-Time Service***, Jun. 2017 – Dec. 2019
 - [PI], Funded by the Ministry of Science, ICT & Future Planning
 - Research and standardize the viewport-based 360 video streaming system
- ***Development of Multi-sensor Intelligent Edge Camera System***, May. 2017 – Apr. 2020
 - [PI], Funded by the Korea Electric Power Corporation Research Institute
 - Implementing smart edge camera system using deep-learning technology
- ***Haptic Video Conferencing System for Individuals with Visual Impairments***, Jul. 2015 – Jun. 2018
 - [PI], Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT & Future Planning(NRF-2015R1C1A1A02037743)
 - Implementing 2D braille system for the individuals with visual impairments
- ***Haptic Telepresence System for Individuals with Visual Impairments***, Apr. 2015 – Mar. 2017
 - [PI], Funded by Gachon University, Seoul, Korea
 - Implementing 2D braille system for the individuals with visual impairments
- ***Sensor Networking Protocols for Emergency Data Collection***, Jun. 2016 – Nov. 2016
 - (Collaborative research, PI: Prof. Sungrae Cho, Ubiquitous Computing Lab., Chung-Ang University, Seoul, Korea), Funded by Electronics and Telecommunications Research Institute (ETRI), Korea
- ***Commercialization of smartphone/PC compatible mobile Braille pad and content production/service system***, Aug. 2016 – Aug. 2019

- (Collaborative research, PI: Prof. Jinsoo Cho, Department of Computer Engineering, Gachon University), Funded by Commercializations Promotion Agency for R&D Outcomes, Korea
- **Haptic Video Conferencing System for Individuals with Visual Impairments**, Jul. 2015 – Aug. 2018
 - Overview: Researching on the haptic video conferencing system for individuals with visual impairments. International collaborations with Prof. C.-H. Park at George Washington University in USA.
 - Institute: Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT & Future Planning(NRF-2015R1C1A1A02037743) (about \$150K)
- **Haptic Telepresence System for Individuals with Visual Impairments**, Apr. 2015 – Mar. 2017
 - Overview: Researching on the video streaming system for individuals with visual impairments
 - Institute : Gachon University, Seoul, Korea (about \$30,000)
- **Sensor Networking Protocols for Emergency Data Collection**, Jun. 2016 – Nov. 2016
 - Collaborative research, PI: Prof. Sungrae Cho, Ubiquitous Computing Lab., Chung-Ang University, Seoul, Korea, Funded by Electronics and Telecommunications Research Institute (ETRI), Korea
- **Commercialization of smartphone/PC compatible mobile Braille pad and content production/service system**, Aug. 2016 – (3 Years+)
 - Collaborative research, PI: Prof. Jinsoo Cho, Department of Computer Engineering, Gachon University, Funded by Commercializations Promotion Agency for R&D Outcomes, Korea
- **Projects at Samsung Electronics could not be opened yet (cur. 2015)**, Mar 2014 – Feb. 2015
 - Institute : Samsung Electronics, Suwon, Korea
- **HEVC (High Efficiency Video Coding), Scalable HEVC, and MPEG-H MMT Standard**, June 2010 – Feb. 2014
 - Overview: Video standard work for HEVC, SHVC, and MPEG-H MMT.
 - Researching and preparing some contributions on Reference-based NAL Prioritization, Weighted Prediction, APS (Adaptive Parameter Set), and so on.
 - Researching and developing SHVC.
 - Implemented Linux-based testing platform for HEVC common testing condition (Python, Shell scripts, MATLAB).
 - Institute : InterDigital Communications, San Diego, CA USA
- **Video Conferencing over LTE**, Jan 2010 – June 2010
 - Overview: Researched video conferencing technologies and designed a new cross-layer video conference solution for LTE.
 - Studied LTE network and down-sampling and up-sampling technology.
 - Some experiments were conducted using HLS (HTTP Live Streaming) and AVC/SVC.
 - Institute : InterDigital Communications, San Diego, CA, USA; King of Prussia, PA, USA
- **Three-Screen Television : The Home Gateway**, Sep 2009 – Dec 2010
 - Primary Role: Designed and implemented a multimedia ‘Home Gateway’ platform using real-time SVC platform.
 - Support IP-enabled deices (HDTV, laptop, handheld and mobile) simultaneously over networks using real-time Scalable Video Coding (SVC) technology.
 - Institute : School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA
- **Real-time H.264 SVC streaming for Three-screen TV**, Sep 2008 - Aug 2009
 - Primary Role: Designed and implemented real-time H.264 SVC streaming server and player for supporting various device capabilities with 3-spatial layers.
 - Institute : School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA

- **SLiM(Scalable Live Media) Framework for a Ubiquitous City**, Dec 2005 - Nov 2008
 - Primary Role: Designed and implemented SLiM Framework by using H.264 SVC and multi-channel technologies.
 - Source of Funding : Seoul Metropolitan Government (about \$70,000)
 - Institute : Department of Computer Science and Engineering, Korea University
- **Design and Implementation of Software Platform for Next Generation Network Environment**, Sep 2004 - Aug 2007
 - Primary Role: Studied autonomic reconfigurable platform.
 - Source of Funding : Korea Science and Engineering Foundation (about \$300,000)
 - Institute : Department of Computer Science and Engineering, Korea University
- **Digital Multimedia Broadcasting (DMB) Content Streaming**, Oct 2004 - Jan 2006
 - Primary Role: Studied DMB technology and designed QoS module for streaming content.(1st step) and studied scalable encoder to design broadcasting server.(2nd step)
 - Source of Funding : Electronics and Telecommunications Research Institute (about \$50,000)
 - Institute : Department of Computer Science and Engineering, Korea University
- **A Group-aware Middleware Infrastructure for Active Surroundings**, Mar 2004 - Feb 2005
 - Primary Role: Designed and implemented the Widget Integration Framework(WIF) using Context Toolkit of Georgia Institute of Technology(Researched by Prof. Abowd).
 - Source of Funding : Ministry of Knowledge Economy (about \$38,181)
 - Institute : Department of Computer Science and Engineering, Korea University
- **Interactive Media Streaming**, Nov 2002 - Feb 2004
 - Primary Role: Implemented interactive media server and player by using our designed XML-based IML(Interactive Media Language)on PDA and it can support MPEG-4 part 2, H.264 AVC, Vector graphics, and some of picture codec.
 - Source of Funding : Ministry of Knowledge Economy (about \$107,000)
 - Institute : Department of Computer Science and Engineering, Korea University
- **Streaming Server QoS Controller Module**, Feb 2002 - Sep 2002
 - Primary Role: Designed and implemented Session Manager for supporting QoS.
 - Source of Funding : Korea Associations of Information and Telecommunication (about \$50,000)
 - Institute : Department of Computer Science and Engineering, Korea University
- **Multimedia Player Implementation on Mobile Phone**, July 2001 - Dec 2002
 - Primary Role: Implemented world's 1st SW-based multimedia player on cell phone using EVRC (Voice codec) and TCM (Video codec for thin client) as a senior engineer at Thin Multimedia, Inc.
 - Cell phone manufactures : Samsung, LG, Motorola, Pantech, Carrier service : SK telecom
 - Institute: Department of Computer Science and Engineering, Korea University and Thin Multimedia, Inc. (This company was started with research outputs from the Media team of Operating System Lab.(Advisor : Prof. Chuck Yoo) in Korea University and launched commercial VOD service as an ASP for SK Telecom.)

PUBLICATIONS

Journal

1. Seehwan Yoo, Eun-Seok Ryu, "**Parallel HEVC Decoding with Asymmetric Mobile Multicores**", Springer, Multimedia Tools and Applications (MTAP), Vol. 76, No. 16, pp. 17337-17352, Aug. 2017.
2. Eun-Seok Ryu, SunJung Ryu, "**Robust Real-Time UHD Video Streaming System Using Scalable High Efficiency Video Coding**", Springer, Multimedia Tools and Applications (MTAP), 2017. (online first)
3. Yeongil Ryu, Eun-Seok Ryu, "**Haptic Telepresence System for Individuals with Visual Impairments**", MYU, Sensors and Materials (S&M), vol. 29, no. 7(2), pp. 1061-1067, Jul. 2017.

4. Hyun-Joon Roh, Sung Won Han, Eun-Seok Ryu, “*Prediction Complexity-Based HEVC Parallel Processing for Asymmetric Multicores*”, Springer, Multimedia Tools and Applications (MTAP), 2017. (Accepted).
5. Hojin Ha, Eun-Seok Ryu, “*Block Recovery Rate-based Unequal Error Protection for Three-Screen TV*”, MDPI, Applied sciences, Vol. 7, No. 2, Feb. 2017.
6. Joongheon Kim, Eun-Seok Ryu, “*QoS Optimal Real-Time Video Streaming in Distributed Wireless Image-Sensing Platforms*”, Journal of Real-Time Image Processing, (Springer), 2016. (online first).
7. Yeongil Ryu, Hyun-Joon Roh, Eun-Seok Ryu, “*Tile Partitioning-based HEVC Parallel Decoding Optimization for Asymmetric Multicore Processor*”, Journal of The Korean Institute Of Information Scientists and Engineers (JOK), Vol. 43. No. 9, pp. 1060-1065, Sep. 2016.
8. Joongheon Kim, Eun-Seok Ryu, “*Stochastic Stable Buffer Control for Quality-Adaptive HEVC Video Transmission in Enterprise WLAN Architectures*”, Journal of Real-Time Image Processing, Vol. 12, no. 2, pp. 465-471, Aug. 2016.
9. Hojin Ha, Eun-Seok Ryu, “*Reliable Scalable Video Streaming Using Layer Weight Switching-based Unequal Luby Transform (LWS-ULT)*”, IET Electronics Letters, Vol. 52, No. 5, pp. 357-359, Mar. 3. 2016. (IET, IF: 1.068 (2013)). Journal ranking(2013): (56.653%, **Q3**)
10. Chung Hyuk Park, Eun-Seok Ryu, Ayanna M. Howard, “*Telerobotic Haptic Exploration in Art Galleries and Museums for Individuals with Visual Impairments*”, IEEE Transactions on Haptics, Vol. 8, No. 3, pp. 327-338, July 2015. (IEEE Computer Society ISSN: 1939-1412, IF: 2.030 (2013)). Journal ranking: 5/24 (18.75%, **Q1**)
11. Joongheon Kim, Eun-Seok Ryu, “*Stochastic Stable Buffer Control for Quality-Adaptive HEVC Video Transmission in Enterprise WLAN Architectures*”, Journal of Real-Time Image Processing, vol. 12, no. 2, pp. 465-471, Aug. 2016, (Springer, ISSN: 1861-8200, IF: 2.020 (2014)). Journal ranking: 60/249 (24%, **Q1**)
12. Eun-Seok Ryu, Joongheon Kim, “*Error Concealment Mode Signaling Method for Robust Mobile Video Transmission*”, AEU-International Journal of Electronics and Communication, vol. 69, no. 7, pp. 1070-1073, July 2015. (Elsevier, ISSN: 1434-8411, IF: 0.601 (2014)). Journal ranking(2012): (69.987%, **Q3**)
13. Joongheon Kim, Eun-Seok Ryu, “*Quality of video streaming in 38GHz millimetre-wave heterogeneous cellular networks*”, IET Electronics Letters, Vol. 50, No. 21, pp. 1526-1528, Oct. 9. 2014. (Institute of Engineering and Technology, ISSN: 0013-5194, IF: 1.038 (2012)), Journal ranking: 128/243 (52.469%, **Q3**).
14. Joongheon Kim, Eun-Seok Ryu, “*Quality Analysis of Massive High-Definition Video Streaming in Two-Tiered Embedded Camera-Sensing Systems*”, International Journal of Distributed Sensor Networks, Mar. 17, 2014. (Hindawi, ISSN: 1550-1329, IF: 0.727(2012), 0.203(2011)). Journal ranking: 2012 (48.333%, **Q3**), 2011 (89.24%, **Q4**)
15. Eun-Seok Ryu, Sung Won Han, “*Priority-Based Selective H.264 SVC Streaming Over Erroneous Converged Networks*”, Multimedia Tools and Applications, Vol. 68, No. 2, pp 337-353, Jan. 2014. (Springer US, ISSN: 1380-7501, IF: 1.346 (2014)). 2011 (**Q3**), 2012 (**Q2**)
16. Eun-Seok Ryu, “*Prediction-Based Picture Prioritisation Method for Hierarchical B-structure of High Efficiency Video Coding*”, IET Electronics Letters, Vol. 49, No. 20, pp. 1268-1270, Sep. 26, 2013. (Institute of Engineering and Technology, ISSN: 0013-5194, IF: 0.93 (2014)).
17. Joongheon Kim, Eun-Seok Ryu, “*Stochastic Low-Power and Buffer-Stable Routing for Gigabit Wireless Video Networks*”, Korean Society of Broadcast Engineers: Journal of Broadcast Engineering, Vol. 18, No. 3, pp. 491-494, May 31, 2013. (ISSN: 1226-7953).
18. Mohsen Sardari, Eun-Seok Ryu, Faramarz Fekri, and Nikil Jayant, “*Multilevel Diversity Coding via Rateless Codes for Reliable and Scalable Video Multicasting*”, IEEE Communications Letters, Vol. 17, No. 5, pp. 956-959, May 31, 2013. (IEEE Communications Society, ISSN: 1089-7798, IF: 1.268 (2014)).
19. Joongheon Kim, Eun-Seok Ryu, “*Distributed stochastic buffering for enterprise WLAN architectures*”, IET Electronics Letters, Vol. 49, No. 4, pp. 302-304, Feb. 14. 2013. (Institute of Engineering and Technology, ISSN: 0013-5194, IF: 0.93 (2014)).
20. Eun-Seok Ryu, Sung Won Han, “*Two-Stage EWMA-based H.264 SVC Bandwidth Adaptation*”, IET Electronics Letters, Vol. 48, No. 20, pp. 1271-1272, Sep. 27. 2012. (Institute of Engineering and Technology, ISSN: 0013-5194, IF: 0.93 (2014)).
21. Eun-Seok Ryu, Shinjin Kang, “*Network-Adaptive N-Screen Gaming System on Cloud Computing Environment*”, Journal of Korea Game Society, Vol. 12, No. 3, pp. 59-67, Jun. 2012. (ISSN: 1598-4540)
22. Eun-Seok Ryu, Nikil Jayant, “*Home Gateway for Three-Screen TV Using H.264 SVC and Raptor FEC*”, IEEE Transactions on Consumer Electronics (TCE), Vol. 57, No. 4, pp. 1652-1660, Dec. 27. 2011. (IEEE Consumer Electronics Society, ISSN: 0098-3063, IF: 1.045 (2014)).
23. Eun-Seok Ryu, Sung Won Han, “*The Slice Group-Based SVC Rate Adaptation Using Channel Prediction Model*”, In IEEE ComSoc Multimedia Communications Technical Committee E-Letter (IEEE MMTTC), Vol. 6, No. 5, pp. 39-41, May 2011.
24. Eun-Seok Ryu, Chuck Yoo, “*Towards Building Large Scale Live Media Streaming Framework for a U-City*”, International Journal of Multimedia Tools and Applications (MTAP), Vol. 37, No. 3, pp. 319-338, May.1. 2008. (Springer

US, ISSN: 1573-7721, IF: 0.462 (2008)).

25. Eun-Seok Ryu, Jung-Hwan Lee, Hyuck Yoo, "**Extracting and Transmitting Video Streams based on H.264 SVC in a Multi-Path Network**", Journal of the Korean Institute of Information Scientists and Engineers, Vol. 35, No 6, pp. 510-520, Dec. 2008.
26. Jung-Hwan Lee, Eun-Seok Ryu, Hyuck Yoo. "**Multi-channel Adaptive SVC Video Streaming with ROI**", Korean Society of Broadcast Engineers: Journal of Broadcast Engineering, Vol. 13, No. 1, pp. 34-42, Jan. 2008.
27. Eun-Seok Ryu, Chuck Yoo, "**SLiM : Scalable Live Media Streaming Framework**", Review of Korean Society for Internet Information, Vol. 7, No. 4, pp. 52-57, Dec. 2006.
28. Eun-Seok Ryu, Jung-Seop Hwang, Chuck Yoo, "**Widget Integration Framework for Context-aware Middleware**", Lecture Notes on Computer Science, Vol. 3744, pp. 161-171, Montreal, Canada, Springer, Oct. 2005.

Conference and Presentation

1. Yeongil Ryu, Eun-Seok Ryu, "**Fast SW Decoding: HEVC Tile-based Parallel Decoding on Asymmetric Mobile Cores**", IEEE Visual Communications and Image Processing 2017 (VCIP2017), 2017. (Accepted)
2. Nguyen Van Dien, Eun-Seok Ryu, "**Performance Comparison of SIMD-based HEVC Decoders on Mobile Processor**", Proceedings of KICS-IEEE International Conference on Information and Communications with Samsung LTE & 5G Special Workshop (ICIC2017), pp. 298-303, Jun. 26-28, 2017.
3. Jang-Woo Son, Won Yeol Oh, Dae Hee Min, Eun-Seok Ryu, "**SHVC Tile-based 360 Video Streaming for Mobile VR**", International Multi-Conference on Engineering and Technology Innovation 2017 (IMETI2017), 2017. (Accepted)
4. Yeongil Ryu, Eun-Seok Ryu, "**Video on Mobile CPU: UHD Video Parallel Decoding for Asymmetric Multicores**", Proceedings of the 8th ACM International Conference on Multimedia System (MMSys 2017), pp. 229-232, Jun. 21, 2017.
5. Yeongil Ryu, Hyun-Joon Roh, Eun-Seok Ryu, "**Haptic Telepresence System for Individuals with Visual Impairments**", The Fifth International Multi-Conference on Engineering and Technology Innovation 2016 (IMETI2016), pp. 25, Oct. 28-Nov. 01, 2016.
6. Yeongil Ryu, Hyun-Joon Roh, Eun-Seok Ryu, "**Novel Video Streaming System for Three-Screen TV**", The Fifth International Multi-Conference on Engineering and Technology Innovation 2016 (IMETI2016), pp. 26, Oct. 28-Nov. 01, 2016.
7. Hyun-Joon Roh, Yeongil Ryu, Eun-Seok Ryu, "**Novel HEVC Parallel Processing Method for Asymmetric Multicores Based on the Prediction Complexity**", The Fifth International Multi-Conference on Engineering and Technology Innovation 2016 (IMETI2016), pp. 26, Oct. 28-Nov. 01, 2016.
8. Hyun-Joon Roh, Yeongil Ryu, Eun-Seok Ryu, "**Robust UHD Video Streaming Systems Using Scalable High Efficiency Video Coding**", The Fifth International Multi-Conference on Engineering and Technology Innovation 2016 (IMETI2016), pp. 27, Oct. 28-Nov. 01, 2016.
9. Yeongil Ryu, Hyun-Joon Roh, Shin Jin Kang, Soo-Kyun Kim, Eun-Seok Ryu, "**Non-Uniform HEVC Tile Partitioning Method for Asymmetric Multicores**", Proceedings of The 11th Asia Pacific International Conference on Information Science and Technology (APIC-IST 2016), pp. 229-231, June 27, 2016.
10. Eun-Seok Ryu, Yeongil Ryu, Hyun-Joon Roh, Joongheon Kim, Bok-gi Lee, "**Towards Robust UHD Video Streaming Systems Using Scalable High Efficiency Video Coding**", International Conference on ICT Convergence 2015 (ICTC 2015), Oct, 2015.
11. Joongheon Kim, Eun-Seok Ryu, "**Feasibility Study of Stochastic Streaming with 4K UHD Video Traces**", International Conference on ICT Convergence 2015 (ICTC 2015), Oct, 2015.
12. Srinivas Gudumasu, Yuwen He, Yan Ye, Yong He, Eun-Seok Ryu, Jie Dong, Xiaoyu Xiu, "**Real-time SHVC Software Decoding with Multi-threaded Parallel Processing**", Proc. SPIE 9217, Applications of Digital Image Processing XXXVII, 92171R, Sep. 23. 2014.
13. Yuwen He, Markus Künstner, Srinivas Gudumasu, Eun-Seok Ryu, Yan Ye, Xiaoyu Xiu, "**Power Aware HEVC Streaming for Mobile**", Visual Communications and Image Processing (VCIP) 2013, Nov. 17. 2013.
14. Ho Min Jung, Eun Seok Ryu, Se Hak Chun, Young Woong Ko, "**Low Overhead File Synchronization Mechanism**", Proceedings of International Conference on Computer and Applications (CCA 2012), Mar. 2012.
15. Eun Seok Ryu, Nikil Jayant, "**Architecture of a Home Gateway for Three-Screen TV**", Proceedings of The 2011 IEEE International Conference on Consumer Electronics (ICCE), pp. 225-226, Jan 2011.
16. Eun Seok Ryu, Hye-Soo Kim, Sungjun Park, Chuck Yoo, "**Priority-Based Selective H.264 SVC Video Streaming Over Erroneous Multiple Networks**", Proceedings of The 2011 IEEE International Conference on Consumer Electronics (ICCE), pp. 337-338, Jan 2011.
17. Eun Seok Ryu, Hye-Soo Kim, Nikil Jayant, "**Three Screen TV: The Home Gateway**", Poster Session of Georgia Tech Broadband Institute Advisory Board Meeting, Apr. 2010.

18. Hye-Soo Kim, Eun-Seok Ryu, Nikil Jayant, "**Channel-Adaptive Video Transmission Using H.264 SVC Over Mobile Wimax Network**", Proceedings of The 2010 IEEE International Conference on Consumer Electronics (ICCE), Jan. 2010.
19. Sungjun Park, Longzhe Han, Hoh Peter In, Eun-Seok Ryu, "**A Prioritized Multi-queue Method for H.264/AVC Live Streaming in Wireless Networks**", cit, vol. 2, pp.331-336, 2009 Ninth IEEE International Conference on Computer and Information Technology, 2009.
20. Eun-Seok Ryu, Nikil Jayant, "**Real-time H.264 SVC streaming for 3-Screen TV**", Poster Session of Georgia Tech Broadband Institute Advisory Board Meeting, Apr. 2009.
21. Eun-Seok Ryu, Hae-Sun Jung, Yong-Woo Lee, Hyuck Yoo, Chang-Sung Jeong, Sung-Won Ahn, "**Content-aware and Network-adaptive Video Streaming of a Ubiquitous Middleware**", Proceedings of the International Conference on Advanced Communication Technology(ICACT 2009), Feb. 2009.
22. Eun-Seok Ryu, Nikil Jayant, "**Video Streaming over Multiple Network Interfaces by using H.264 SVC**", Poster Session of Georgia Tech Broadband Institute Advisory Board Meeting, Oct. 2008.
23. Eun-Seok Ryu, Jung-Hwan Lee, Chuck Yoo, "**Content-aware and Network-adaptive Video Streaming over Multiple Network Interfaces**", Proceedings of the 2008 International Conference on Ubiquitous City Technology (ICUCT 2008), pp. 43-49, Feb. 2008.
24. Eun-Seok Ryu, Jung-Hwan Lee, Chuck Yoo, "**Multi Channel based Evacuation Guidance System by Using Scalable Video Streaming**", International Conference on Convergence Information Technology (ICCIT 2007), pp. 1700-1707, Nov. 2007.
25. Eun-Seok Ryu, Chuck Yoo, "**SLiM : Scalable Live Media Streaming Framework for a U-City**", Proceedings of the 2007 International Conference on Ubiquitous City Technology (ICUCT 2007), pp. 97-104, Feb. 2007.
26. Eun-Seok Ryu, Chuck Yoo, "**An Approach to Interactive Media System for Mobile Devices**", Proceedings of the 12th ACM International Conference on Multimedia (ACM MM 2004), Oct, 2004.
27. Eun-Seok Ryu, Chuck Yoo, "**An Approach to Interactive Media System for Mobile Devices**", Proceedings of the First International Workshop on Broadband Wireless Services and Applications (BroadWISE 2004) , Oct, 2004.
28. Eun-Seok Ryu, Chuck Yoo, "**Audio Transmitting on Mobile Phone by Using UDP-Lite Protocol**", eapliit2003, Jul. 2003.

Korean Domestic Conference

1. Yeongil Ryu, Hyun-Joon Roh, Jangwoo Son, Seon-Dae Kim, Dae Hee Min, Won Yeol Oh, Eun-Seok Ryu, "**HEVC Parallel Decoding Optimization for ARM SoC-based HMD**", KCC2017 SW Implementation/Demo Contest, Jun. 20, 2017.
2. Seon-Dae Kim, Hyun-Joon Roh, Yeongil Ryu, Eun-Seok Ryu, "**Daisy/EPUB-based Braille Conversion Software Development for 2D Braille Information Terminal**", Proceedings of Korean Institute of Information Scientists and Engineers Summer Conference, Korea Computer Congress 2017(KCC2017), pp. 1975-1977, Jun. 18-20, 2017.
3. Hyun-Joon Roh, Yeongil Ryu, Seon-Dae Kim, Sang-Soon Lee, Eun-Seok Ryu, "**Prediction Complexity-Based Tile Allocation for Asymmetric Multicores in HEVC Parallel Processing**", Proceedings of Korean Institute of Information Scientists and Engineers Winter Conference, Dec. 21-23, 2016.
4. Jang-Woo Son, Yeongil Ryu, Hyun-Joon Roh, Eun-Seok Ryu, "**SHVC-based ROI Tile Parallel Processing for Mobile Virtual Reality**", Proceedings of Korean Institute of Information Scientists and Engineers Winter Conference, Dec. 21-23, 2016.
5. Shin-An Kang, Hyun-Joon Roh, Bok-gi Lee, Eun-Seok Ryu, "**Tile PU Partitioning-based Unequal Error Protection for Robust HEVC Video Streaming**", Proceedings of Korean Institute of Information Scientists and Engineers Winter Conference, Dec. 21-23, 2016.
6. Hyun-Joon Roh, Yeongil Ryu, Eun-Seok Ryu, "**Video Decoding Complexity Analysis Based on HEVC Resolution**", Proceedings of Korea Information Processing Society (KIPS) Fall Conference, Oct. 30. 2015.
7. Yeongil Ryu, Hyun-Joon Roh, Woongjune Chung, Eun-Seok Ryu, "**A Study on Novel Video Conferencing System for Visually Impaired**", Proceedings of Korea Information Processing Society (KIPS) Fall Conference, Oct. 30. 2015.
8. Bo-Gyun Jeong, Eun-Seok Ryu, Sin-Jin Kang, "**Prototype of Procedural Quest Generation in Persistent RPG via Non-Player Character**", Proceedings of the Korean Society of Computer Information Conference, Jan. 2014.
9. Eun-Seok Ryu, Hyuck Yoo, "**Scalable Video Codec-Based Multimedia Streaming Framework for a Ubiquitous City**", Conference on Information and Communications, Korea University, Dec. 2007.

10. Eun-Seok Ryu, Jung-Hwan Lee, Hyuck Yoo, "**Extracting and Transmitting Video Streams based on H.264 SVC in a Multi-Path Network**", Proceedings of Korea Computer Congress (KCC 2007), Jun. 2007. (*Distinguished Paper Award*)
11. Jung-Hwan Lee, Eun-Seok Ryu, Hyuck Yoo, "**Multi Channel Adaptive SVC Video Streaming with ROI**", Proceedings of Networked Video Workshop 2007, pp. 403-406, Oct. 2007. (Best Paper)
12. Jeong-Seop Hwang, Eun-Seok Ryu, Hyuck Yoo, "**Research on supporting the Dynamic Widget Binder in the Context Toolkit**", Proceedings of Human Computer Interaction (HCI 2005) Conference, Jan. 2005.
13. Seung-Jin Han, Eun-Seok Ryu, Hyuck Yoo, "**Extension of Interactive Media System on Mobile Device**", HCI2005 Conference, Jan. 2005.
14. Eun-Seok Ryu, Mi-Ha Kim, Chuck Yoo, "**Design and Implementation of Interactive Media System Using Mobile Device**", Proceedings of Korea Information Processing Society (KIPS) Spring Conference, 2004.
15. Mi-Ha Kim, Eun-Seok Ryu, Chuck Yoo, "**Architecture of Interactive Media System**", Korean Institute of Information Scientists and Engineers (KIISE) Spring Conference, 2004.
16. Eun-Seok Ryu, Mi-Ha Kim, Chuck Yoo, "**Design and Implementation of Interactive Media System on Mobile Device**", Proceedings of Human Computer Interaction (HCI 2004) Ubiquitous Computing Workshop, Feb. 2004.
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22. Min-Hong Yun, Eun-Seok Ryu, Hyuck Yoo, "**Design of Mobile Interactive Language**", Proceedings of Korean Institute of Information Scientists and Engineers (KIISE) Spring Conference, 2003.
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24. Eun-Seok Ryu, Hyuck Yoo, "**Audio streaming system on mobile phone using UDP-Lite protocol**", Proceedings of Korea Information Processing Society (KIPS) Fall Conference, 2002. (*Distinguished Paper Award*)
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15. Eun-Seok Ryu (InterDigital Communications), "**Cross-check result of JCTVC-G509**", JCTVC-G907 for Geneva meeting on HEVC standard, Nov. 2011.
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2. Eun-Seok Ryu, "**Providing Virtual Reality Service Considering Region of Interest**", Industry-Academic Cooperation Division of Gachon University, PCT Application, No. PCT/KR2017/001087, Feb. 1. 2017
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5. Eun-Seok Ryu et al., "**Method For Providing Multimedia Service And Electronic Device Therefor**", Samsung Electronics, U.S. Non-Provisional Patent Application, May. 2016.
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8. Eun-Seok Ryu et al., "**Method of Processing Image and Electronic Device Thereof**", U.S. Non-Provisional Patent Application, Mar. 2016.
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1. Eun-Seok Ryu, Jang-Woo Son, Yeongil Ryu, "**Tile-Based Video Streaming for Mobile Virtual Reality**", Industry-Academic Cooperation Division of Gachon University, No. 10-2017-0077826, Jun. 20. 2017 [Application]
2. Eun-Seok Ryu, "**Method For Image Decoding, Method For Image Encoding, Apparatus For Image Decoding, Apparatus For Image Encoding**", Industry-Academic Cooperation Division of Gachon University, No. 10-1713492, Feb.28.2017
3. Eun-Seok Ryu, "**Providing Virtual Reality Service Considering Region of Interest**", Industry-Academic Cooperation Division of Gachon University, No. 10-2016-0125145, Sep. 28. 2016 [Application]
4. Eun-Seok Ryu, "**Parallel Video Processing Using Multicore System**", Industry-Academic Cooperation Division of Gachon University, No. 10-2016-0125143, Sep. 28. 2016 [Application]

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- 13 Korea domestic patent applications written in Samsung Electronics were submitted in 2014, but they are not open to public yet.

HONORS AND AWARDS

- Demo Paper Award, "*HEVC Parallel Decoding Optimization for ARM SoC-based HMD*", KCC2017 SW Implementation/Demo Contest, Jun. 20, 2017.
- Bronze Best Paper Award, IEEE Seoul Section Student Paper Contest 2016, Dec 3, 2016.
- IEEE Senior Member Elevation, April 23, 2016.
- Distinguished Paper Award, "Extracting and Transmitting Video Streams based on H.264 SVC in a Multi-Path Network", Korea Computer Congress (KCC 2016), Jun. 2016.
- 2014 InterDigital Innovations Award, "Codec Architecture for Multiple Layer Video Coding (Non-provisional patent application) (*Just after my leaving InterDigital, the InterDigital Innovation Award was given to the authors of the non-provisional patent application in April 2014.*)
- Team Performance Awards, SVP experienced employee course, Samsung Human Resources Development Center, Mar. 2014.
- Distinguished Paper Award, Prototype of Procedural Quest Generation in Persistent RPG via Non-Player Character, The Korean Society of Computer and Information, Jan. 2014.
- Best Paper Award, Multi-channel adaptive SVC video streaming with ROI, The Korean Society of Broadcast Engineers (Networked Video Workshop 2007), Oct. 2007
- Distinguished Paper Award, Extracting and Transmitting Video Streams based on H.264 SVC in a Multi-Path Network, Proceedings of Korea Computer Congress (KCC 2007), Jun. 2007.
- Distinguished Paper Award (No. 2002-4-23), Audio streaming system on mobile phone using UDP-Lite protocol, Korea Information Processing Society, Nov. 2002.

EDUCATION

Korea University, Seoul, Korea

Operating System Lab (Adviser: Prof. Chuck Yoo)

- **Ph.D., Computer Science and Engineering**, Feb 2008

Dissertation: "*A Framework for Large-Scale and Multichannel Video Streaming System*"

- **M.S., Computer Science**, Aug 2001

Thesis: "*Design and Implementation of Priority-based Adaptive MPEG-4 Streaming System*"

- **B.S., Computer Science**, Aug 1999

TEACHING EXPERIENCE

- (Will be updated soon)
- Assistant Professor, Multimedia Communications (08825001) 2016. 03 – 2016. 08
Graduate school in Computer Engineering, Gachon University, Sunnam, Korea
- Assistant Professor, Programming Fundamentals 2016. 03 – 2016. 08
Department of Computer Engineering, Gachon University, Sunnam, Korea
- Assistant Professor, Mobile Communications (10886001) 2016. 03 – 2016. 08
Department of Computer Engineering, Gachon University, Sunnam, Korea
- Assistant Professor, Operating Systems (08306008) 2015. 09 – 2016. 02
Department of Computer Engineering, Gachon University, Sunnam, Korea
- Assistant Professor, Algorithm (08095001) 2015. 03 – 2015. 08
Department of Computer Engineering, Gachon University, Sunnam, Korea
- Research Professor, Embedded Media Processing (ESI 603) 2008. 05 – 2008. 08
Graduate school in Embedded Software, Korea University, Seoul, Korea

- Lecturer, Special Topics in Database 2008. 03 – 2008. 08
Graduate School in Computer Science, SungShin Women's University, Seoul, Korea
- Lecturer, Introduction to Computer Science and Lab Work I (CNCE 151) 2007. 09 – 2008. 02
Division of Computer and Communication Engineering, Korea University, Seoul, Korea
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- Part-time Lecturer, Multimedia System (CE1034-51) 2006. 03 – 2006. 08
Department of Computer Engineering, SeoKyeong University, Seoul, Korea
- Visiting Professor, Multimedia Programming (2) 2005. 09 – 2006. 02
Department of Multimedia, SungKyul University, Anyang, Korea
- Visiting Professor, Multimedia Programming (1) 2005. 03 – 2005. 08
Department of Multimedia, SungKyul University, Anyang, Korea
- Visiting Professor, Introduction to Multimedia System 2004. 09 – 2005. 02
Department of Multimedia, SungKyul University, Anyang, Korea
- Visiting Professor, Computer Game 2004. 09 – 2005. 02
Department of Multimedia, SungKyul University, Anyang, Korea
- Visiting Professor, Computer Game 2004. 03 – 2004. 08
Department of Multimedia, SungKyul University, Anyang, Korea
- Lecturer, Introduction to Information and Society (INS 041) 2003. 03 – 2003. 08
College of Information & Communication, Korea University, Seoul, Korea
- Part-time Lecturer, Linux Kernel Internals 2000. 10.
Samsung Institute of Advanced Technology
- Teaching Assistant (T.A.), System Software (CSE 417) 1999. 09 – 2000. 02
Operating System Laboratory, Computer Science and Engineering, Korea University, Seoul, Korea

SPECIALTIES

- Virtual Reality: VR file format and system-level standard, Viewport-based 360 video streaming
- Image/video compression : MPEG-x, H.26x, High Efficiency Video Coding (HEVC), Scalable Video Coding (H.264 SVC, SHVC), Multiview Video Coding (H.264 MVC)
- Quality of Service (QoS) for IPTV : End-to-end flow control and cross-layer UEP streaming
- Wireless video streaming for mobile device including embedded system SW
- Embedded programming with C / Writing scripts (Matlab, Python)

REVIEW SERVICE & PROGRAM COMMITTEE

- Journal
 - Elsevier, Ad Hoc Networks (ADHOC)
 - IEEE, Transactions on Transactions on Circuits and Systems for Video Technology (TCSVT)
 - Elsevier, Digital Signal Processing (DSP)
 - Springer, Multimedia Tools and Applications (MTAP)
 - Springer, Journal of Real-Time Image Processing (JRTIP)
 - IEEE, Transactions on Multimedia (TMM)

- Natural Sciences, International Journal of Applied Mathematics & Information Sciences (AMIS)
 - World Scientific Publishing Co., International Journal of Software Engineering and Knowledge Engineering (IJSEKE)
 - ACS, International Journal of Research and Practice in Information Technology (JRPIT)
 - International Journal of Computing and Digital Systems
 - Journal of Institute of Embedded Engineering of Korea
 - KSII, Transactions on Internet and Information Systems
 - IEMEK, Journal of Embedded Systems and Applications
 - KICS, Journal of Communications and Networks
- Conference and workshop:
 - IEEE Symposium on Computer Applications and Industrial Electronics (ISCAIE 2014).
 - International Conference on Embedded and Multimedia Computing (EMC 2013).
 - IEEE Symposium on Computers and Informatics (ISCI 2013).
 - IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE 2012).
 - The International Conference on Embedded and Multimedia Computing (EMC 2012): Program Committee.
 - IEEE Symposium on Computers and Informatics (ISCI 2011).
 - The International Conference on Consumer Electronics (ICCE 2011, ICCE 2012, ICCE 2013, ICCE 2014, ICCE2015).
 - IEEE Conference on Open Systems (ICOS 2010).
 - International Conference on Computer Applications and Industrial Electronics (ICCAIE 2010, ICCAIE 2011).
 - The 2nd International Conference on Internet (ICONI 2010).
 - Georgia Tech Research and Innovation Conference (gtRIC 2010).
 - The 18th International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV 2008).

AFFILIATION

- MPEG Korea National body, member 2017-Current
- MPEG US national body, member, 2011-2014
- Institute of Electrical and Electronics Engineers (IEEE), Senior member (member: 2011~2016, **Senior member**: 2016~).
 - IEEE Communications Society (current)
 - IEEE Circuits and Systems Society
 - IEEE Robotics and Automation Society
 - IEEE Computer Society (current)
 - IEEE Signal Processing Society
- Korean-American Scientists and Engineers Association, member (KSEA), San Diego chapter, 2012-2014.
- The Korean Institute of Information Scientists and Engineers (KIISE), Life member
- Korea Information Processing Society (KIPS), Life member.
- The Korean Society of Broadcast and Media Engineers (KoSBE), Life member.

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