
Seokhee Jeon, Ph.D.

Assistant Professor
Dept. of Computer Engineering
College of Electronic and Information
Kyung Hee University
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Curriculum Vitae

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Education

Ph.D., Computer Science and Engineering, 2010, POSTECH
Dissertation: Haptic Augmented Reality: Modulating Real Object Stiffness
Advisor: Seungmoon Choi
B.S., Computer Science and Engineering, 2002, POSTECH

Positions

Sep 2012– Assistant professor, Kyung Hee University, Republic of Korea
Sep 2010–Aug 2012 Postdoctoral researcher, Computer Vision Laboratory at ETH Zürich, Switzerland
Jan 2010 Visiting researcher in Computer Vision Laboratory, ETH Zürich, Switzerland, Advisor:
Matthias Harders
2003–2010 Research assistant, Haptics and Virtual Reality Lab., POSTECH
Dec 2005–Apr 2006 Visiting researcher in Human Interface Technology Lab. NZ, Univ. of Canterbury, New
Zealand, Advisor: Mark Billinghurst
2004–2006 Administrator of CAVE Virtual Reality System at ChungAm Library, POSTECH

Research Interests

Haptic rendering in mixed reality environment
Visuo-haptic augmented reality framework for medical training
Usability of marker-based visual augmented reality
Interaction techniques in large immersive display for virtual environment

Professional Memberships/Services

Membership: IEEE Computer Society, IEICE, EuroHaptics Society, Technical Committee on Haptics,
Korea Haptics Community,
Served as a referee for:
World Haptics Conference 2011–
IEEE Haptics Symposium 2010–
Eurohaptics 2010–
IEEE/ACM Int. Symp. Mixed and Augmented Reality 2009–
Served as an external reviewer for:
IEEE Transaction on Haptics
Presence: Teleoperators and Virtual Environments
IEEE Transactions on Biomedical Engineering
Advanced Robotics
IEEE Transaction on Robotics
Video chair, World Haptics Conference 2015
Student volunteers chair, Haptics Symposium 2016
Program chair, HCI Korea 2015, 2016
Editor, ICROS (Institute of Control, Robotics and Systems, Korea) Journal (2014–)
Program chair, Korea-Japan Workshop on Mixed Reality (2015–)
Directing Board Member, Korea Haptics Community (2015–)
Program chair, International Symposium on Ubiquitous VR 2007

Honors and Awards

Jul. 2016 Best Poster Honorable Mention, EuroHaptics 2016, “Data-Driven Modeling of Anisotropic
Haptic Textures: Data Segmentation and Interpolation.”
Nov. 2015 Young Researcher Award, Korea Haptics Community
Nov. 2014 Demo Honorable Mention, AsiaHaptics 2014, “Normal and Tangential Force
Decomposition and Augmentation Based on Contact Centroid.”

Nov. 2013	Winner of the Best Paper Award, Korea Computer Congress 2014, “Haptic Rendering of Curved Surface by Bending an Encountered-Type Flexible Plate”
Feb. 9, 2011	Winner of the Best Ph.D. Dissertation Award, Dept. of Computer Science and Engineering, Pohang University of Science and Technology
2010	Winner of the Best Demonstration Award (among 34 demos), IEEE Haptics Symposium 2010 Conference, “Stiffness Modulation for Haptic Augmented Reality: Extension to 3D Interaction”
2005	Korea Research Foundation Scholarship
2003–2010	POSTECH Scholarship (tuition and monthly stipend)
2003–2009	Brain Korea 21 Fellowship (tuition and monthly stipend)

Acquired Funding

2016-	Project leader, “Perceptual Performance Enhancement of Ultrasonic Haptic Display,” ETRI Korea, 70,000 KRW/Year
2014-	Project leader, “Breast/ Prostate Tumor Palpation Using Haptic Mixed Reality,” Basic Science Research Program, NRF Korea, 50,000k KRW/Year.
2012-	Project leader, “Haptic Modeling and Rendering Technology for Mirror World,” Global Frontier, NRF Korea, 60,000k KRW/Year.
2013-	Project partner, “Real-time Mobile Cloud Research,” ITRC, MKE, 20,000k KRW/Year.
2013-	Project partner, “Advanced Robotic Surgery based on Deep Tissue Imaging and Haptic Feedback Technology,” ERC, NRF Korea, 50,000k KRW/Year.
2013–2014	Project leader, “Extension and Application of Haptic Augmented Reality: Multi-Finger and Palpation System and Augmented Reality Painting System,” New researcher program, KHU, 20,000k KRW.

Publications: Books, Chapters, Proceedings

1. **Seokhee Jeon**, Seungmoon Choi, and Matthias Harders, “Haptic Augmented Reality: Taxonomy, Research Status, and Challenges,” in *Fundamentals of Wearable Computers and Augmented Reality*, Second Edition, edited by Woodrow Barfield et al., CRC Press, 2015 .
2. **Seokhee Jeon**, Seungmoon Choi, and Matthias Harders, “Haptic Augmentation in Soft Tissue Interaction,” in *Multisensory Softness*, Springer Series on Touch and Haptic Systems, edited by M. Di Luca, pp. 241-257, Springer, 2014.

Publications: Journal Articles

1. Arsen Abdulali, Waseem Hassan, and **Seokhee Jeon**, “Stimuli-Magnitude-Adaptive Sample Selection for Data-Driven Haptic Modeling,” *MDPI Entropy*, vol. 18, no. 222, 2016.
2. Kunryun Cho, Seokhee Jeon, Jinsung Cho, and Ben Lee, “ISRMC-MAC: Implementable Single-Radio, Multi-Channel MAC Protocol for WBANs,” *KSII Transactions on Internet and Information Systems*, vol. 10, no. 3, pp. 1052-1070, 2016.
3. Seokhee Jeon, “Haptic Rendering of Curved Surface by Bending an Encountered-Type Flexible Plate,” *IEICE Information and Systems*, vol. E99-D, no. 7, pp. 1862-1870, 2016.
4. Sunghoon Yim, **Seokhee Jeon**, and Seungmoon Choi, “Data-Driven Haptic Modeling and Rendering of Viscoelastic and Frictional Responses of Deformable Objects,” *IEEE Transaction on Haptics*, vol. 9, no. 4, pp. 548-559, 2016.
5. Beomseok Kim, Jinsung Cho, Seokhee Jeon, and Ben Lee, “An AHP-Based Flexible Relay Node Selection Scheme for WBANs,” *Springer Wireless Personal Communications*, vol. 89, no. 2, pp. 501-520, 2016.
6. Sunghoon Yim, **Seokhee Jeon**, and Seungmoon Choi, “Topography Compensation for Haptization of a Mesh Object and Its Stiffness Distribution,” *IEEE Transaction on Haptics*, vol. 8, no. 1, pp. 90-101, 2015.
7. **Seokhee Jeon** and Matthias Harders, “Haptic Tumor Augmentation: Exploring Multi-Point Interaction,” *IEEE Transactions on Haptics*, vol. 7, no. 4, pp. 477-485, 2014.

8. Tahrima Hashem, Chowdhury Farhan Ahmed, Md. Samiullah, Sayma Akther, Byeong-Soo Jeong, and **Seokhee Jeon**, "An Efficient Approach for Mining Cross-Level Closed Itemsets and Minimal Association Rules Using Closed Itemset Lattices," Elsevier Expert Systems with Applications, vol. 41, no. 6, pp. 2914-2938.
9. Byeong-Soo Jeong, A.T.M. Golam Bari, Mst. Rokeya Reaz, **Seokhee Jeon**, Chae-Gyun Lim, and Ho-Jin Choi, "Codon-Based Encoding for DNA Sequence Analysis," Elsevier Methods, vol. 67, no. 3, pp. 373-379, 2014.
10. Asad Masood Khattak, Noman Akbar, Mohammad Aazam, Taqdir Ali, Adil Mehmood Khan, **Seokhee Jeon**, Myungwon Hwang, and Sungyoung Lee, "Context Representation and Fusion: Advancements and Opportunities," MDPI Sensors, vol. 14, no. 6, pp. 9628-9668, 2014.
11. **Seokhee Jeon**, "Haptically Assisting Breast Tumor Detection by Augmenting Abnormal Lump," IEICE Transactions on Information & Systems, vol. E97-D, no. 2, pp. 361-365, 2014.
12. Jin Wang, Xiaoqin, Bin Li, Sungyoung Lee, and **Seokhee Jeon**, "A Mobile Sink Based Uneven Clustering Algorithm for Wireless Sensor Networks," Journal of Internet Technology, vol. 14, no. 6, pp. 895-902, 2013.
13. Eung Jun Cho, Choong Seon Hong, Sungwon Lee, and **Seokhee Jeon**, "A Partially Distributed Intrusion Detection System for Wireless Sensor Networks," MDPI Sensors, vol. 13, no. 12, pp. 15863-15879, 2013.
14. **Seokhee Jeon**, Matthias Harders, and Seungmoon Choi, "Rendering Virtual Tumors in Real Tissue Mock-Ups Using Haptic Augmented Reality," IEEE Transactions on Haptics, vol. 5, no. 1, pp. 77-84, 2012.
15. **Seokhee Jeon** and Seungmoon Choi, "Real Stiffness Augmentation for Haptic Augmented Reality," Presence: Teleoperators and Virtual Environments, vol. 20, no. 4, pp. 337-370, 2011.
16. **Seokhee Jeon** and Seungmoon Choi, "Haptic Augmented Reality: Taxonomy and Example of Stiffness Modulation," Presence: Teleoperators and Virtual Environments, vol. 18, no. 5, pp. 387-408, 2009.
17. **Seokhee Jeon**, Jane Hwang, Gerard J. Kim, and Mark Billinghurst, "Interaction with Large Ubiquitous Displays Using Camera-Equipped Mobile Phones," Personal and Ubiquitous Computing, vol. 14, no. 2, pp. 83-94, 2010.
18. **Seokhee Jeon**, Hyeongseop Shim, and Gerard J. Kim, "Viewpoint Usability for Desktop Augmented Reality," International Journal of Virtual Reality, vol.5. no.3, pp.33-39, 2006.

Publication: Conference Papers (Peer-Reviewed)

1. Arsen Abdulali and Seokhee Jeon, "Data-Driven Rendering of Anisotropic Haptic Textures," In Proceedings of AsiaHaptics, 2016.
2. Waseem Hassan, Arsen Abdulali, and Seokhee Jeon, "Towards Universal Haptic Library: Library-Based Haptic Texture Assignment Using Image Texture and Perceptual Space," In Proceedings of AsiaHaptics, 2016.
3. Aishwari Talhan and Seokhee Jeon, "Prostate Tumor Palpation Simulator Based on Pneumatic and Augmented Haptics," In Proceedings of AsiaHaptics, 2016.
4. Arsen Abdulali and Seokhee Jeon, "Data-Driven Modeling of Anisotropic Haptic Textures: Data Segmentation and Interpolation," In Proceedings of EuroHaptics, pp. 228-239, 2016.
5. Waseem Hassan and **Seokhee Jeon**, "Evaluating Differences Between Bare-handed and Tool-Based Interaction in Perceptual Space," In Proceedings of IEEE Haptics Symposium,

pp. 185-191, 2016.

6. Sunghoon Yim, **Seokhee Jeon**, and Seungmoon Choi, "Data-Driven Haptic Modeling and Rendering of Deformable Objects Including Sliding Friction," In Proceedings of the IEEE World Haptics Conference (WHC), pp. 305-312, 2015.
7. Sunghoon Yim, **Seokhee Jeon**, and Seungmoon Choi, "Normal and Tangential Force Decomposition and Augmentation Based on Contact Centroid," AsiaHaptics, 2014 (Honorable mention - Final candidate for the best demo award).
8. Noman Akbar and **Seokhee Jeon**, "Encountered-Type Haptic Interface for Grasping Interaction with Round Variable Sized Objects via Pneumatic Balloon," in Proceedings of EuroHaptics, pp. 192-200, 2014 (Poster presentation).
9. Orcun Goksel, **Seokhee Jeon**, Matthias Harders, and Gabor Szekely, "Deformable Haptic Model Generation Through Manual Exploration," in Proceedings of the World Haptics Conference (WHC), pp. 543-548, 2013 (Oral presentation).
10. **Seokhee Jeon** and Matthias Harders, "Extending Haptic Augmented Reality: Modulating Stiffness during Two-Point Squeezing," In Proceedings of the IEEE Haptics Symposium (HS), pp. 141-146, 2012 (Oral presentation; acceptance rate = 26%).
11. **Seokhee Jeon**, Jean-Claude Metzger, Seungmoon Choi, and Matthias Harders, "Extensions to Haptic Augmented Reality: Modulating Friction and Weight," In Proceedings of the World Haptics Conference (WHC), pp. 227-232, 2011 (Oral presentation; acceptance rate = 16.6%).
12. **Seokhee Jeon**, Benjamin Knoerlein, Matthias Harders, and Seungmoon Choi, "Haptic Simulation of Breast Cancer Palpation: A Case Study of Haptic Augmented Reality," In Proceedings of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR), pp. 237-238, 2010.
13. **Seokhee Jeon** and Seungmoon Choi, "Stiffness Modulation for Haptic Augmented Reality: Extension to 3D Interaction," In Proceedings of the IEEE Haptics Symposium (HS), pp. 273-280, 2010 (**Recipient of Best Demo Award**).
14. Gabjong Han, Jaebong Lee, In Lee, **Seokhee Jeon**, and Seungmoon Choi, "Effects of Kinesthetic Information on Memory Chunking in 2D Sequential Selection Task," In Proceedings of the Haptics Symposium (HS), pp. 43-46, 2010 (Oral presentation; Extended abstract; Acceptance rate = 18.7%).
15. Gabjong Han, **Seokhee Jeon**, and Seungmoon Choi, "Improving Perceived Hardness of Haptic Rendering via Stiffness Shifting: An Initial Study," In Proceedings of the ACM Symposium on Virtual Reality Software and Technology, pp. 87-90, 2009 (acceptance rate = 23.7%).
16. **Seokhee Jeon** and Seungmoon Choi, "Modulating Real Object Stiffness for Haptic Augmented Reality," Lecture Notes on Computer Science (EuroHaptics 2008), vol. 5024, pp. 609-618, 2008 (Acceptance rate = 36%).
17. **Seokhee Jeon** and Gerard J. Kim, "Providing a Wide Field of View for Effective Interaction in Desktop Tangible Augmented Reality," In Proceedings of the IEEE Virtual Reality, pp. 3-10, 2008 (Acceptance rate = 25%).
18. **Seokhee Jeon**, Gerard J. Kim, and Mark Billinghurst, "Interacting with a Tabletop Display Using a Camera Equipped Mobile Phone," Lecture Notes on Computer Science (HCI International 2007), vol. 4551, pp. 336-343, 2007.
19. **Seokhee Jeon**, Jane Hwang, Gerard J. Kim, and Mark Billinghurst, "Interaction Techniques in Large Display Environments using Hand-held Devices," In Proceedings of the ACM Symposium on Virtual Reality Software and Technology, pp. 100-103, 2006.

Publication: Non-refereed Conference Papers/Poster/Demo/Abstract

1. Sunghoon Yim, **Seokhee Jeon**, and Seungmoon Choi, "Data-driven haptic modeling and rendering of frictional sliding contact with soft objects for medical training," International Conference on Ubiquitous Robots and Ambient Intelligence (Poster), 2014.
2. **Seokhee Jeon**, "Research Progress in Haptic Augmented Reality", Korea-Japan Mixed Reality Workshop, 2014.
3. Sunghoon Yim, **Seokhee Jeon**, Seungmoon Choi, and Matthias Harders, "Progresses for haptic augmented reality," World Haptics Conference (Demonstration), 2011.
4. **Seokhee Jeon**, Seungmoon Choi, and Matthias Harders, "Rendering Virtual Tumors in Real Tissue Mock-Ups Using Haptic Augmented Reality," Korea-Japan Workshop on Mixed Reality (KJMR), 2011.
5. **Seokhee Jeon**, Seungmoon Choi, Gabjong Han, and Matthias Harders, "Haptic augmented reality and an example of breast cancer palpation," Technical demonstration for the IEEE International Symposium on Mixed and Augmented Reality (ISMAR), 2010.
6. **Seokhee Jeon** and Seungmoon Choi, "Modulating Real Object Stiffness for Haptic Augmented Reality," Demonstrated in the IEEE Virtual Reality, 2010 (Demonstration).
7. **Seokhee Jeon** and Seungmoon Choi, "Haptic Augmented Reality: Modulation of Real Object Stiffness," In DVD Proceedings of World Haptics Conference, pp. 384- 385, 2009 (Demonstration).
8. **Seokhee Jeon** and Gerard J. Kim, "Mosaicing a Wide Geometric Field of View for Effective Interaction in Augmented Reality," In Proceedings of the IEEE and ACM International Symposium on Mixed and Augmented Reality, pp. 1-2, 2007 (Poster).
9. Yongjin Kim, Jaehoon Jung, **Seokhee Jeon**, Sangyoon Lee, and Gerard J. Kim, "Telepresence Meets Racing Games," In proceedings of the ACM SIGCHI International Conference on Advances in Computer Entertainment Technology, 2005 (Demonstration, Poster).

Patents

1. Korea patent registered, "Curvature Haptic Device and Curvature Rendering Method," 10-1565571, 2015.
2. US patent pending, "Apparatus and Method for Providing Haptic Augmented Reality," US 12/394,032, 2009.
3. Korea patent registered, "Apparatus and Method for Motion Recognition," 10-0992567, 2010.
4. Korea patent pending, "Game Controller, Server, and Motion Tracking Method Using IR Position Tracking and Accelerometer," 10-2007-0140535, 2007.

Teaching

Since 2016	Computational Geometry, Dept. Computer Engineering, Kyung Hee Univ.
Since 2014	Advanced Human Computer Interaction, Dept. Computer Engineering, Kyung Hee Univ.
Since 2012	Programming Basics, Dept. Computer Engineering, Kyung Hee Univ.
Since 2014	Advanced Object-Oriented Programming, Dept. Computer Engineering, Kyung Hee Univ.
Since 2013	Human Computer Interaction, Dept. Computer Engineering, Kyung Hee Univ.
2004–2006	Teaching assistant, Introduction to Virtual Reality, Automata and Formal Language, Introduction to Programming, Dept. CSE, POSTECH

Advising

2013-2015	Noman Akbar (Master Course)
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2013-2015	Hongchae Lee (Master Course)
Since 2013	Yoona Jeong (Undergraduate)
Since 2014	Arsen Abdulali (Master-PhD Combined Course)
Since 2014	Waseem Hassan (Master Course)
Since 2015	Aichwari Talhan (PhD Course)
Since 2015	Ogay Tatyana (Master-PhD Combined Course)
Since 2016	Ahsan Raza (Master Course)

Presentations

2016	“Tutorial: Design, Implementation, and Evaluation of Haptic System,” HCI Korea 2016
2016	“Haptic System and Haptic Display Technology,” Display System Workshop
2016	“Haptic System and Ultrasonic Non-Contact Haptics,” ETRI
2015	“Haptic Augmented Reality,” IoT Workshop, Daegu
Aug. 2014	“Introduction to Haptics Laboratory at KHU,” Korea Haptics Workshop 2014
Jun. 2014	“Haptic Augmented Reality,” Multisensory softness workshop in EuroHaptics 2014
Jun. 2014	“Augmenting Human through Haptic AR,” ICRA Workshop on Human Modeling and Control for Assistive Technologies, 2014
Apr. 2014	“Research Progress on Haptic Augmented Reality,” KJMR Workshop 2014
Feb. 2014	“Modeling and Rendering of Stiffness for Haptic Augmented Reality,” Multisensory softness workshop in Haptics Symposium 2014
Mar. 2013	“Haptics in Medicine,” The Korean Society of Medical & Biological Engineering
Nov. 2012	“Haptic Augmented Reality,” Regular Seminar, Dept. CSE, POSTECH

Personal Information

Citizenship: Korean

Marital status: Married

Date of birth: May 21, 1979 (Andong, Republic of Korea)

Mar. 25, 2016