

Inrak Choi

✉ irchoi@stanford.edu • 🌐 www.inrakchoi.com

Education

Stanford University <i>Ph.D. candidate in Mechanical Engineering, GPA: 3.98/4.0</i> Advisor: Sean Follmer, Ph.D. & Co-advisor: Mark R. Cutkosky, Ph.D.	Stanford, CA, USA 2016 – present
Stanford University <i>M.S. in Mechanical Engineering, GPA: 3.98/4.0</i> Quals: Dynamics, Robotics, & Research (Haptics)	Stanford, CA, USA 2013 – 2016
Korea University <i>B.S. in Mechanical Engineering, GPA: 3.88/4.0</i>	Seoul, Korea 2009 – 2013

Research Experience

Stanford SHAPE Lab <i>Research Assistant, Advisor: Sean Follmer, Ph.D.</i>	Stanford, CA June 2015 – present
<ul style="list-style-type: none">○ Developing handheld haptic devices using voice coil actuators to create variable perceived stiffness and pseudo force for VR interaction.○ Developing wearable haptic interfaces for grasping, named Wolverine and Grabity, to enable users to get kinesthetic feedback from virtual objects, such as rigid stiffness or weight, in VR/AR environments.○ Investigating passive & energy-dissipative mechanisms, such as jamming, braking, and clutching, for light weight, power-efficient wearable haptic interfaces.○ Collaborated with researchers at MIT Media Lab, Oculus Research, and Google.	
Microsoft Research <i>Intern for a haptic project</i>	Redmond, WA June 2017 – September 2017
<ul style="list-style-type: none">○ Mentor: Mike Sinclair, Ph.D., Hrvoje Benko, Ph.D., Eyal Ofek, Ph.D., Christian Holz, Ph.D.○ Submitted a VR haptic controller paper to CHI 2018 and filed a patent. Details are confidential at this time.	
Hansen Medical, Inc, <i>Intern in Robotics Group, Supervisor: June Park, Ph.D.</i>	Mountain View, CA June 2015 – September 2015
<ul style="list-style-type: none">○ Proposed new active guidewire manipulation mechanisms.○ Wrote two invention disclosures in three months then applied to a patent.	
Stanford Artificial Intelligence Laboratory <i>Research Assistant, Advisor: Oussama Khatib, Ph.D.</i>	Stanford, CA January 2014 – May 2015
<ul style="list-style-type: none">○ Human-friendly robotic arm project. Designed and assembled a wrist and a gripper.○ Implemented a hybrid actuation system with pneumatic artificial muscles and electrical dc motors.	

Honors and Awards

Best Paper Award, UIST 2017 <i>Author, "Grabity: A Wearable Haptic Interface for Simulating Weight and Grasping in Virtual Reality"</i>	2017
Honorable Mention, Fast Company Innovation by Design 2017 <i>"Wolverine: A Wearable Haptic Interface for Grasping in VR"</i>	2017
Best Paper Award, UIST 2016 <i>Co-author, "Rovables: Miniature On-Body Robots as Mobile Wearables"</i>	2016

Best Demo Award, UIST 2016 <i>Author, "Wolverine: A Wearable Haptic Interface for Grasping in VR"</i>	2016
Young Engineers Honor Society (YEHS) <i>The National Academy of Engineering of Korea (NAEK)</i>	2011 – present
Presidential Science Scholarship <i>Awarded by the Korean President</i>	2009 – 2013
Great Honor Student for Academic Achievement <i>Korea University</i>	2009 – 2013

Publications

Journal Papers.....

1. **I. Choi**, N. Corson, L. Peiros, E. W. Hawkes, S. Keller, and S. Follmer. A Soft, Comrollable, High Force Density Linear Brake Utilizing Layer Jamming. *IEEE Robotics and Automation Letters*, 2016. (RA-L)

Conference Papers.....

1. **I. Choi**, E. Ofek, H. Benko, M. Sinclair, and C. Holz. CLAW: A Multifunctional Handheld Haptic Controller for Grasping, Touching, and Triggering in Virtual Reality. (CHI 2018)(Accepted)
2. **I. Choi**, H. Culbertson, M. R. Miller, A. Olwal, and S. Follmer. Grability: A Wearable Haptic Interface for Simulating Weight and Grasping in Virtual Reality. (UIST 2017) **Best Paper Award**
3. H.-L. C. Kao, D. Ajilo, O. Anilionyte, A. Dementyev, **I. Choi**, S. Follmer, and C. Schmandt. Exploring interactions and perceptions of kinetic wearables. (DIS 2017)
4. A. Dementyev, H.-L. C. Kao, **I. Choi**, D. Ajilo, M. Xu, J. A. Paradiso, C. Schmandt, and S. Follmer. Rovables: Miniature On-Body Robots as Mobile Wearables. In Proceedings of the 29th Annual ACM Symposium on User Interface Software & Technology (UIST 2016) **Best Paper Award**
5. **I. Choi**, E. W. Hawkes, D. L. Christensen, C. J. Ploch, and S. Follmer. Wolverine: A Wearable Haptic Interface for Grasping in Virtual Reality. In Proceedings of the 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016)

Demos & Posters.....

1. A. Dementyev, J. Hernandez, S. Follmer, I. Choi, and J. Paradiso. SkinBot: A Wearable Skin Climbing Robot. In Adjunct proceedings of the 29th Annual ACM Symposium on User Interface Software & Technology (UIST 2017)
2. **I. Choi** and S. Follmer. Wolverine: A Wearable Haptic Interface for Grasping in Virtual Reality. In Adjunct proceedings of the 29th Annual ACM Symposium on User Interface Software & Technology (UIST 2016) **Best Demo Award**
3. **I. Choi** and S. Follmer. "Wolverine", ACM Interactions, Demo Hour, Jan/Feb 2017. In press.

Patents

1. **I. Choi**, H. Culbertson, and S. Follmer, "Grability: A Wearable Haptic Interface for Simulating Weight and Grasping in Virtual Reality," 2017. (Stanford disclosure S17/113)
2. E. W. Hawkes, **I. Choi**, and S. Follmer, "Wolverine: A Wearable Haptic Interface for Grasping in Virtual Reality," 2017. (U.S. Appl. No.: 15/588507)
3. **I. Choi**, J. Park, and A. Kokish, "Active Drive for Guidewire Manipulation," 2016. (U.S. Appl. No.:

15/250232).

- I. Choi, "A Device for Removing the Snow of Vinyl House," 2008. (Korea Utility Model Appl. No. 20-2008-0000167)

Teaching Experience

ME 161 / 261: Dynamic Systems, Vibrations and Control <i>Course Assistant, Instructor: Paul Mitiguy, Ph.D.</i>	Stanford 2014, 2015, and 2016
ME 331 A: Advanced Dynamics & Computation <i>Course Assistant, Instructor: Paul Mitiguy, Ph.D.</i>	Stanford 2014 and 2015
ME 331 B: Advanced Dynamics, Simulation & Control <i>Course Assistant, Instructor: Paul Mitiguy, Ph.D.</i>	Stanford 2014 and 2015
CS 225A: Experimental Robotics <i>Course Assistant, Instructor: Oussama Khatib, Ph.D.</i>	Stanford 2015
CS 223A: Introduction to Robotics <i>Course Assistant, Instructor: Oussama Khatib, Ph.D.</i>	Stanford 2015

Professional Activities

Reviewer.....
Transactions on Haptics, Soft Robotics, IEEE VR

References

Available upon request

Updated on January 16, 2018