

# Hyojoon Park

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## RESEARCH INTEREST

Synergetic application of machine learning in physics-based simulation for computer graphics and medical image.

## EDUCATION

### University of Wisconsin-Madison

*Ph.D. Candidate in Computer Sciences – advised by professor Eftychios Sifakis*

*Sep. 2021 - Current  
Wisconsin, USA*

### Seoul National University

*M.S. in Mechanical Engineering – advised by professor Dongjun Lee*

*Feb. 2019  
Seoul, South Korea*

- Thesis: Dental Simulator with Increased Z-width of Haptic Rendering (AsiaHaptics 2018)
- Received Outstanding MS Thesis Presentation Award
- Research Area: Haptics in VR, robotics, and physics-based simulation in computer graphics

### Technical University of Munich (TUM)

*B.S. Exchange Student in Mechanical Engineering*

*Spring 2014  
Munich, Germany*

### Korea University

*B.S. in Mechanical Engineering*

*Feb. 2017  
Seoul, South Korea*

## PUBLICATIONS

- **Near-realtime Facial Animation by Deep 3D Simulation Super-Resolution,**  
**Hyojoon Park**, Sangeetha Grama Srinivasan, Matthew Cong, Doyub Kim, Byungsoo Kim, Jonathan Swartz, Ken Museth, and Eftychios Sifakis, ACM Transactions on Graphics, 2024. (Presented at SIGGRAPH ASIA 2024)  
[paper][github]
- **Collagen Fiber Centerline Tracking in Fibrotic Tissue via Deep Neural Networks with Variational Autoencoder-based Synthetic Training Data Generation,**  
**Hyojoon Park\***, Bin Li\*, Yuming Liu, Michael S. Nelson, Helen M. Wilson, Eftychios Sifakis, and Kevin W. Eliceiri, Medical Image Analysis, 2023. (\* equal contributions)  
[paper]
- **Capturing Detailed Deformations of Moving Human Bodies,**  
He Chen, **Hyojoon Park**, Kutay Macit, and Ladislav Kavan, SIGGRAPH, 2021.  
[paper] [project page] [multi-camera calibration codes]
- **Adaptive Precision-Enhancing Hand Rendering for Wearable Fingertip Tracking Devices,**  
**Hyojoon Park** and Jung-Min Park, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.  
[paper] [video]
- **Stretchable Skin-Like Cooling/Heating Device for Reconstruction of Artificial Thermal Sensation in Virtual Reality,**  
Jinwoo Lee, Heayoun Sul, Wonha Lee, Kyung Rok Pyun, Inho Ha, Dongkwan Kim, **Hyojoon Park**, Hyeonjin Eom, Yeosang Yoon, Jinwook Jung, Dongjun Lee, and Seung Hwan Ko, Advanced Functional Materials, 2020.  
[paper]
- **Dental Simulator with Increased Z-width of Haptic Rendering,**  
**Hyojoon Park**, Myungsin Kim, and Dongjun Lee, AsiaHaptics, 2018.  
[paper] [video] [thesis presentation]
- **Rigid-body Collaborative Manipulation among Remote Users with Wearable Cutaneous Haptic Interfaces,**  
Myungsin Kim, WonHa Lee, **Hyojoon Park**, Junghan Kwon, Yong-Lae Park, and Dongjun Lee, AsiaHaptics, 2018.  
[paper] [video]
- **Design and Performance Evaluation of Wearable Haptic Interfaces,**  
WonHa Lee, Myungsin Kim, **Hyojoon Park**, and Dongjun Lee, International Conference on Control, Automation and Systems, 2018.
- **Wearable Cutaneous Haptic Interface with Soft Sensors and IMUs,**  
Yongjun Lee, Myungsin Kim, Yongseok Lee, **Hyojoon Park**, and Dongjun Lee, Korea Robotics Society Annual Conference, 2018.

## WORK EXPERIENCES

### NVIDIA

Graduate Research Intern (High-Fidelity Physics Research Team)

- Focused on enhancing the transformations of images into animatable 3D avatars.

May. 2024 - August 2024  
California, USA

### University of Utah

Graduate Research Assistant (Dr. Ladislav Kavan)

- Open-sourced multi-camera calibration codes: <https://github.com/hjoonpark/MultiCamCalib> (SIGGRAPH 2021).

Sep. 2019 - May 2021  
Utah, USA

### Korea Institute of Science and Technology (KIST)

Intern Researcher at CHIC (Center of Human-centered Interaction for Coexistence)

- Developed a VR hand rendering framework for wearable fingertip tracking devices (IROS 2020)  
[paper] [video]

Mar. - Aug. 2019  
Seoul, Korea

### Engineering School in KAIST New Education

(Korea Advanced Institute of Science and Technology)

- Led "Arduino-based Exploration Robot" and "Developing Android Service App" classes

Sep. 2014 - Feb. 2015  
Seoul, Korea

### Military Service

Republic of Korea Army (ROKA) as Military English Interpreter

Jun. 2011 - Mar. 2013  
21 months

## TEACHING ASSISTANT

Computer Graphics (CS559), University of Wisconsin-Madison

Spring 2022

Computer Graphics (CS559), University of Wisconsin-Madison

Fall 2021

Interactive Computer Graphics (CS6610), University of Utah

Spring 2021

Computer Graphics (CS4600), University of Utah

Fall 2020

System Analysis in Mechanical Engineering, Seoul National University

Spring 2018

## AWARDS

### Outstanding MS Thesis Presentation Award

Department of Mechanical Engineering

- Topic: Dental Simulator with Increased Z-width of Haptic Rendering  
[video] [thesis presentation]

Dec. 2018  
Seoul National University

### Award of Excellence

English-Mediated Course Tutor: Writing

Fall 2013  
Korea University

## SCHOLARSHIPS

Merit-based Scholarship, Seoul National University

Spring 2018

National Scholarship, Korea University

Spring 2016

Future Scholarship, Korea University

Spring 2016

## OTHER EXPERIENCES

### Guest Presenter at NAVER LABS Seminar

Topic: 'Dental Simulator with Increased Z-width of Haptic Rendering'

Dec. 2018  
Seongnam, Korea

### Mobile Application Developer, independent

2015 - 2016

- **Loop Timer (MacOS, 2021-)**

[project page]

- Repeatable timer app that shows up on your menu bar, floats on top of all the other windows, gives notifications, customizable in different sizes and colors, can repeat infinitely, and have multiple timer items.

- **Quick Clipboard (MacOS, 2021-)**

[project page]

- Adds frequently used texts to the clipboard for copy paste using keyboard shortcuts.

- **Korean Subway (iOS, Android, 2017 - discontinued)**

[facebook] [instagram]

- First Korean subway app to use satellite-based subway maps with real-time arrival/departure information

- KDijkstra's shortest path algorithm, Kd-Tree data structure, Swift, Java, PHP-cURL, SQLite, Amazon AWS, Photoshop, Illustrator

- **KUSchedule (iOS, Android, 2015 - discontinued)**  
[archive page]  
· Server-based auto-generative lecture timetable app for Korea University students  
· AES-256 encryption, Objective-C, Java, PHP-cURL, DOM parser/regex, Photoshop, Illustrator
- **Space Shoot RPG (iOS, Android, 2016 - discontinued)**  
[facebook] [archive page]  
· Arcade-RPG game  
· Cocos2d-x in C++, SQLite, Photoshop, Illustrator
- **Falling Moon (iOS, Android, 2016 - discontinued)**  
[archive page]  
· Physics-based arcade game  
· Cocos2d-x in C++, Cocos2d-x physics engine, Photoshop, Illustrator
- **Group Alarm (iOS, Android, 2015 - discontinued)**  
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· Socket-based mutli-user alarm app  
· Node.js, UDP, Javascript, jQuery, Ajax, HTML, CSS, MySQL, Cordova, Amazon AWS, Photoshop, Illustrator

### **Center of Teaching and Learning**

English-Mediated Course Tutor: Writing (received Award of Excellence)

Fall 2013

Korea University

### **SYMEE Academy**

TOEFL Writing Teacher

Jan. - Jul. 2013

Seoul, Korea

### **EBS (English Broadcasting System) Jeju English Camp**

English translator for foreign teachers

Jan. 2011

Jeju Island, Korea

### **Republic of Korea Army**

Military English Translator

Jun. 2011 - Mar. 2013

Seoul, Korea