Hyojoon Park

hyojoon.park@wisc.edu · hjoonpark.github.io

RESEARCH INTEREST

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

EDUCATION

University of Wisconsin-Madison   *Sep. 2021 - Current*
Ph.D. Candidate in Computer Sciences – advised by professor Eftychios Sifakis   *Wisconsin, USA*

Seoul National University   *Feb. 2019*
M.S. in Mechanical Engineering – advised by professor Dongjun Lee   *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)   *Spring 2014*
B.S. Exchange Student in Mechanical Engineering   *Munich, Germany*

Korea University   *Feb. 2017*
B.S. in Mechanical Engineering   *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   *May. 2024 - August 2024*
Graduate Research Intern (High-Fidelity Physics Research Team)   *California, USA*
· Contributed in creating the next generation of Image2Avatar model

University of Utah   *Sep. 2019 - May 2021*
Graduate Research Assistant (Dr. Ladislav Kavan)   *Utah, USA*
· Open sourced multi-camera calibration codes: github.com/hjoonpark/MultiCamCalib

Korea Institute of Science and Technology (KIST)   *Mar. - Aug. 2019*
Intern Researcher at CHIC (Center of Human-centered Interaction for Coexistence)   *Seoul, Korea*
· Developed a VR hand rendering framework for wearable fingertip tracking devices (published to IROS 2020)
  [paper] [video]

Engineering School in KAIST New Education   *Sep. 2014 - Feb. 2015*
(Korea Advanced Institute of Science and Technology)   *Seoul, Korea*
· Led "Arduino-based Exploration Robot" and "Developing Android Service App" classes

Military Service   *Jun. 2011 - Mar. 2013*
Republic of Korea Army (ROKA) as Military English Interpreter   *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   *Dec. 2018*
Department of Mechanical Engineering   *Seoul National University*
· Topic: Dental Simulator with Increased Z-width of Haptic Rendering
  [video] [thesis presentation]

Award of Excellence   *Fall 2013*
English-Mediated Course Tutor: Writing   *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   *Dec. 2018*
Topic: 'Dental Simulator with Increased Z-width of Haptic Rendering'   *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)**
  [archive page]
  · 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   *Fall 2013*
English-Mediated Course Tutor: Writing (received Award of Excellence)   *Korea University*

SYMEE Academy   *Jan. - Jul. 2013*
TOEFL Writing Teacher   *Seoul, Korea*

EBS (English Broadcasting System) Jeju English Camp   *Jan. 2011*
English translator for foreign teachers   *Jeju Island, Korea*

Republic of Korea Army   *Jun. 2011 - Mar. 2013*
Military English Translator   *Seoul, Korea*