

JAEHYUN LEE

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RESEARCH INTERESTS

Computer Graphics, Physics-Based Animation, Deformable bodies, Fluids, Coupling, Scientific Computing, Numerical methods, Optimization

EDUCATION

University of Wisconsin-Madison

Ph.D. in Computer Sciences

Wisconsin, USA

Sep. 2024 – present

Korea University

M.S. in Computer Science and Engineering

Seoul, Republic of Korea

Sep. 2021 – Feb. 2024

- Advised by [Prof. JungHyun Han](#) and [Prof. Kiwon Um](#)
- GPA: 3.93/4.0

Korea University

B.S. in Computer Science and Engineering (Double major)

Seoul, Republic of Korea

Mar. 2019 – Feb. 2021

B.S. in Mechanical Engineering

Mar. 2015 – Feb. 2021

- Including 2 years of military service
- GPA: 3.98/4.0
- **Graduated with Great Honor (*Summa Cum Laude*)**

PUBLICATIONS

- Seung-wook Kim, HuiSeong Lee, **JaeHyun Lee**, Kiwon Um, JungHyun Han. “Dimension Expansion for Mass-spring Model.” (Submitted) [\[paper\]](#) [\[video\]](#)
- Heejo Jeong, Seung-wook Kim, **JaeHyun Lee**, Kiwon Um, Min Hyung Kee, JungHyun Han. “Momentum-preserving inversion alleviation for elastic material simulation.” In Computer Animation and Virtual Worlds (CAVW), Vol. 35, No. 3, May 2024, pp. e2249. [\[paper\]](#) [\[video\]](#)
- **JaeHyun Lee**, Seung-wook Kim, Kiwon Um, Min Hyung Kee, JungHyun Han. “Inversion alleviation for stable elastic body simulation.” In Computer Animation and Virtual Worlds (CAVW), Vol. 34, No. 3-4, May 2023, pp. e2183. [\[paper\]](#) [\[video\]](#)

RESEARCH AND PROJECT EXPERIENCE

Energy conservation for Material Point Method (MPM)

Researcher

Korea University

Oct. 2023 – present

- Developed C++, CUDA-based state-of-the-art MPM framework, with visualization system using OpenGL. [\[code\]](#)

LG Electronics: Air Conditioning Airflow Simulation Visualization System

Project Assistant

Korea University

Mar. 2022 – Aug. 2022

- Contributed to the project by implementing Python-based, GPU-accelerated real-time airflow simulator visualized with volume rendering. The project won the **first prize** among 489 teams. [\[code\]](#) [\[video\]](#)

Collision Detection for Constrained Projective Dynamics (CPD)

Researcher

Korea University

Dec. 2020 – May. 2021

- Implemented tetrahedral collision detection module for ACM Transactions on Graphics 2021 paper titled ‘Constrained Projective Dynamics: Real-Time Simulation of Deformable Objects with Energy-Momentum Conservation’. [\[paper\]](#) [\[video\]](#) [\[code\]](#)

TEACHING

Computer Graphics

Teaching Assistant

Korea University

Spring 2022

- Teaching Assistant for COSE331 Computer Graphics at Korea University. (Instructor: Prof. JungHyun Han)

SCHOLARSHIPS

Kwanjeong Educational Foundation Scholarship, Kwanjeong Educational Foundation	<i>Spring 2022 – Fall 2023</i>
Teaching Assistant Scholarship, Korea University	<i>Spring 2022</i>
Research Scholarships, Korea University	<i>Fall 2021, Fall 2022</i>
National Science and Engineering Scholarship, Ministry of Science and ICT	<i>Spring 2019 – Fall 2020</i>
Special Scholarships, Korea University	<i>Spring, Fall 2018</i>

HONORS AND AWARDS

Best Industry-Academic Project Award, Ministry of Trade, Industry and Energy	<i>Nov 2023</i>
Best Research award, Korea Electronics Association	<i>Feb 2022, Dec 2022, Aug 2023</i>
Great Honor, Korea University	<i>Graduation</i>
President's List, Korea University	<i>Fall 2018 – Spring 2019</i>
Dean's List, Korea University	<i>Spring 2018</i>
Semester High Honors, Korea University	<i>Spring 2017 – Spring 2020</i>

TECHNICAL SKILLS

Languages: C/C++, Python, Java

APIs: OpenGL, CUDA, OpenMP

Other Tools and Libraries: Git, Eigen, Partio, ImGui, Assimp, PyTorch, Fusion360, CMake, Taichi Lang, Blender

LANGUAGE LEVEL

Korean: Native

English: Fluent