Myung Chul Kim

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Education

Stanford University, PhD in Mechanical Engineering — Sept. 2023 – Present
- Advisor: Wei Cai
- Research Area: Molecular Dynamics, Statistical Mechanics, Polymer Science

KAIST, BS in Mechanical Engineering and Electrical Engineering – Double Major — Mar. 2019 – Aug. 2023

Georgia Institute of Technology, Exchange Program in Mechanical Engineering — Jan. 2022 – Dec. 2022

Research Experience

PhD Student, Stanford University – Stanford, CA — Sept. 2023 – May 2029
- Development of importance sampling algorithm for accelerated Monte Carlo simulation using neural network.
- Utilization of machine learning interatomic potential (i.e., MLIP) for large scale molecular dynamics simulations.
- Modeling of polymer networks (e.g., fibrin network of blood clots) and investigate mechanical properties.

Research Assistant, Georgia Institute of Technology – Atlanta, GA — Jan. 2022 – Dec. 2022
- Conceptualization, design, fabrication, and testing of a soft-electronic stretchable pressure sensor.
- Design and manufacturing of a 3D printed goggle for diabetic retinopathy detection.
- Development and fabrication of an automatic fit-adjustable smart filtering mask.

Publications

Accelerating Monte Carlo Simulation of Rare Events by Importance Sampling using Neural Network — In Preparation
Myung Chul Kim, Wei Cai

Smart Filtering Facepiece Respirator with Self-Adaptive Fit and Wireless Humidity Monitoring — Mar. 2025
Kangkyu Kwon, Yoon Jae Lee, Yeongju Jung, Ira Soltis, Yewon Na, Lissette Romero, ***Myung Chul Kim***, Nathan Rodeheaver, Hodam Kim, Chaewon Lee, Seung-Hwan Ko, Jinwoo Lee, Woon-Hong Yeo
10.1016/j.biomaterials.2024.122866

Stretchable Wearable Wireless Bioelectronics Using All Printed Pressure Sensors and Strain Gauges — Oct. 2024
Nathan Zavanelli, Yoon Jae Lee, ***Myung Chul Kim***, Allison Bateman, Matthew Guess, Hyeonseok Kim, Dinesh K. Patel, Woon-Hong Yeo
10.1002/admt.202400998

Advances in Electrochemical Sensors for Detecting Analytes in Biofluids — Mar. 2023
Jimin Lee, ***Myung Chul Kim***, Ira Soltis, Sung Hoon Lee, Woon-Hong Yeo
10.1002/adsr.202200088

Conferences

DAMOP 2025, The 56th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics - Portland, OR — June 2025

- Accelerating Monte Carlo Simulation of Rare Events by Importance Sampling using Neural Network

Gordon Research Conference, Multifunctional Materials and Structures - Ventura, CA Sep. 2022

- Stretchable Pressure Sensor using Inter-Digitated Serpentine Structure

Awards

James D. Plummer Graduate Fellowship, Stanford University Sept. 2023 – Aug. 2024

Global Leadership Award, KAIST Mar. 2023

National Science & Technology Scholarship, Korea Ministry of Science and ICT Mar. 2019 – Aug. 2023

Open Innovation Challenge Award, Korean Society of Mechanical Engineers Oct. 2022

President's Undergraduate Research Award, Georgia Institute of Technology Aug. 2022

Academic Excellence Scholarship, Guwon Scholarship Foundation May 2021

Teaching Experience

Teaching Assistant, Stanford University – Stanford, CA Jan. 2025 – Mar. 2025

- Introduction to Statistical Mechanics (ME 346A): Provided problem session lectures, held office hours, graded assignments and exams, and developed Python programs to visualize numerical simulations for students.

Technologies

Languages: Python, C, MATLAB

Technologies: Solidworks, Altium, FEniCS