

# Hyeonbeen Lee

## Curriculum Vitae

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📄 Github: <https://github.com/hyeonbeenlee>

M.S. Candidate in Kyunghee University



## RESEARCH INTEREST

- Autonomous robot and mobility
- Long-horizon forecasting
- Skill extraction
- Reinforcement learning

## EDUCATION

Mar. 2022–Present **Kyunghee University**,  
Yongin, South Korea *Master's Course in Mechanical Engineering*,  
GPA – 4.09/4.3 (4.33/4.5) (Advisor: Prof. Jin-gyun Kim).

Mar. 2015–Feb. 2022 **Kyunghee University**,  
Yongin, South Korea *B.S. in Mechanical Engineering*,  
GPA – 3.60/4.3 (3.87/4.5) (Advisor: Prof. Jin-gyun Kim).

## PUBLICATIONS

**H. Lee**, S. Han, J. Han, T. Yeo, J.G. Kim. “Interpretable real-time multi-horizon force forecasting of underwater robot using Transformer and GRN”, in preparation

**H. Lee**, S. Han, H.S. Choi, J.G. Kim. “cNN-DP: Composite neural network with differential propagation for impulsive nonlinear dynamics”, *Journal of Computational Physics* (IF=4.645), revised.

S. Han, G.E. Jeong, **H. Lee**, W.S. Choi, J.G. Kim, “Multi-body dynamics model for spent nuclear fuel transportation system under normal transport test conditions”, *Nuclear Engineering and Technology* (IF=2.817), accepted.

## PRESENTATIONS

18<sup>th</sup> May 2023 **H. Lee**, S. Han, H.S. Choi, J.G. Kim. “Composite neural network with differential propagation for modeling nonlinear impulsive dynamics”, Conference on Dynamics and Control, Korean Society of Mechanical Engineers (Oral Presentation)  
Busan, South Korea

23<sup>rd</sup> Mar. 2023 **H. Lee**, S. Han, H.S. Choi, J.G. Kim. “Meta-modeling of nonlinear impulsive dynamics using composite neural network model with differential propagation”, Conference on Engineering Reliability, Korean Society of Mechanical Engineers (Oral Presentation)  
Jeju, South Korea

16<sup>th</sup> Feb. 2023 **H. Lee**, S. Han, H.S. Choi, J.G. Kim. “Composite neural network framework for modeling impulsive nonlinear dynamic responses”, IMAC XLI 2023 (Oral Presentation)  
Austin, TX, USA

4<sup>th</sup> Dec. 2022 **H. Lee**, S. Han, G.E. Jeong, J.G. Kim. “Development of multibody dynamics trailer model using normal transportation test data and DNN based surrogate model generation”, Korean Society for Noise and Vibration Engineering (Oral Presentation)  
Jeju, South Korea

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## GRANTS

### Ongoing

Jan. 2022–Present *Deep-learning based reaction force and torque prediction model development for underwater ground cutting robot using experimental measurements and dynamic simulation data*, Korea Research Institute of Ships and Ocean Engineering (KRISO).

May 2022–Present *Metamodel generation and evolution procedures for flexible multibody dynamics*, FunctionBay Inc.

### Completed

Sep. 2021–Oct. 2022 *Development of ground-sea transportation test simulation model using multibody dynamics and DNN-based metamodel*, Korea Atomic Energy Research Institute (KAERI).

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## SKILLS

- Python & ML Expert
- Linux
- Docker
- MATLAB
- PyTorch
- Git
- C++/C#
- RecurDyn(Multibody Dynamics Simulation)

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## AWARDS AND HONORS

Spring 2021 **Academic Excellence Scholarship (Full Tuition)**,  
Dept. of Mechanical Engineering, Kyunghee University.

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## CONFERENCES

- May 2023 Conference on Dynamics and Control  
Busan, South Korea Korean Society of Mechanical Engineers (KSME)
- Mar. 2023 Conference on Engineering Reliability  
Jeju, South Korea Korean Society of Mechanical Engineers (KSME)
- Feb. 2023 IMAC-XLI  
Austin, TX, USA Society for Experimental Mechanics (SEM)
- Nov. 2022 Fall Academic Conference  
Jeju, South Korea Korean Society for Noise and Vibration Engineering (KSNVE)
- Aug. 2022 AI Summer School 2022  
Seoul, South Korea Korean Society of Mechanical Engineers (KSME)
- Apr. 2022 Conference on Dynamics and Control  
Suwon, South Korea Korean Society of Mechanical Engineers (KSME)
- Mar. 2022 Conference on Engineering Reliability  
Jeju, South Korea Korean Society of Mechanical Engineers (KSME)
- Aug. 2021 AI Summer School 2021  
Online Korean Society of Mechanical Engineers (KSME)
- Apr. 2021 “AI, Data Driven Models & Machine Learning: How Will Advanced Technologies Shape Future Simulation Processes?”  
Online National Agency Finite Element Methods and Standard (NAFEMS)

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## MISCELLANEOUS

May 2023 **New TEPS**,  
513/600.

2022–Present **Department Office Assistant**,  
Dept. of Mechanical Engineering, Kyunghee University.

2022 **Teaching Assistant (Multibody Dynamics)**,  
Dept. of Mechanical Engineering, Kyunghee University.

2021–2022 **Undergraduate Research Assistant**,  
Modeling and Simulation Lab, Kyunghee University (Advisor: Jin-gyun Kim).  
Research Topic: Acceleration of dynamic simulation process using deep learning based approach

2021–2022 **Bachelor's Thesis Project Leader**,  
Aerodynamic Design Exploration & Big Data Analysis Lab, Kyunghee University (Advisor: Prof. Shin-kyu Jeong).  
Research Topic: Data-driven aerodynamic coefficient prediction using Deep Neural Network and PARSEC airfoil parameterization

2017–2019 **Republic of Korea Marine Corps**,  
Pohang, South Korea Honorably Discharged as a Sergeant at 1<sup>st</sup> Marine Division.