

# DONGEON LEE (이동언)

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## RESEARCH INTERESTS

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Generative Design, Data-driven Design Optimization, Bayesian Optimization (BO), Uncertainty Quantification (UQ), Engineering Applications of Artificial Intelligence, Virtual Product Development (VPD)

## EDUCATION

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Integrated PhD Student **Korea Advanced Institute of Science and Technology (KAIST)**, Daejeon, Korea  
Feb. 2023 ~ Present

- Cho Chun Shik Graduate School of Mobility
- Advisor: Prof. Namwoo Kang



B.S. **Pusan National University (PNU)**, Busan, Korea  
Mar. 2011 ~ Feb. 2017

- Department of Mechanical Engineering
- Advisor: Prof. Changmin Son  
(Currently at Virginia Tech (USA), Rolls-Royce Commonwealth Professor)



## PROFESSIONAL EXPERIENCE

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**Hanwha Defense** (Currently Hanwha Aerospace)  
**Associate Research Engineer**, ILS (Integrated Logistics Support) Center, Research Institute

Changwon, Korea  
Dec. 2016  
~ May 2022



**Hanwha**

**KAIST NQe (Nuclear & Quantum Engineering) Internship Program**  
**Intern Researcher**, NPNP (Nuclear Power and Propulsion Laboratory)

Daejeon, Korea  
July 2015



## HONORS AND AWARDS

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**National Science & Technology Scholarship (Merit-based)**, Korea Student Aid Foundation (KOSAF) (2015-2016)  
**Commendation Award**, Poster Session, 2015 KAIST NQe Internship Program, KAIST (Jul. 2015)  
**Summa Cum Laude (Top 1%, GPA 4.20/4.5)**, B.S. in Mechanical Engineering, Pusan National University (Feb. 2017)  
**Silver Prize**, 2025 Korean Society of Mechanical Engineers (KSME), CAE & Applied Mechanics Division Spring Conference (Apr. 2025)

## RESEARCH PROJECT

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Jun. 2025 ~ Present	<b>Generative AI-driven Parametric Design to Accelerate the Development of Vehicle Closure Systems</b> Sponsored by HMC (Hyundai Motor Company) <ul style="list-style-type: none"><li>• Role: Project Leader</li></ul>
Mar. 2023 ~ Sep. 2025	<b>Development of fundamental technology for virtual product design to analyze suitable areas for renewable ocean energy</b> Sponsored by KRISO (Korea Research Institute of Ships & Ocean Engineering) <ul style="list-style-type: none"><li>• Role: Project Leader</li></ul>
Mar. 2023 ~ July 2023	<b>Real-time prediction of wave height using AI for digital twin of wave energy converter</b> Sponsored by KRISO (Korea Research Institute of Ships & Ocean Engineering) <ul style="list-style-type: none"><li>• Role: Project Leader</li></ul>
Nov. 2019 ~ May 2022	<b>Development of Redback IFV ILS (Integrated Logistics Support) elements (CBM<sup>+</sup> / Training (VR/AR))</b> Sponsored by CoA (Commonwealth of Australia) & HDA (Hanwha Defense of Australia) <ul style="list-style-type: none"><li>• Role: Project Engineer</li></ul>
Dec. 2016 ~ Oct. 2019	<b>Development of K21 IFV (Infantry Fighting Vehicle) depot maintenance elements</b> Sponsored by ROK (Republic of Korea) Army <ul style="list-style-type: none"><li>• Role: Project Engineer</li></ul>
July 2015	<b>Verification of the GAMMA<sup>+</sup> code with the supercritical CO<sub>2</sub>(S-CO<sub>2</sub>) compressor test data about the accident scenarios which are related to cooling water loop</b> Sponsored by KAIST NQe NPNP <ul style="list-style-type: none"><li>• Advisor: Prof. Jeongik Lee</li><li>• Role: Intern Researcher</li></ul>

## TECHNICAL SKILLS

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<b>CAD/CAE Tools</b>	FreeCAD, Fusion360, Ansys
<b>Programming Languages</b>	Python, MATLAB
<b>Frameworks</b>	PyTorch, TensorFlow, Hugging Face
<b>Operating Systems</b>	Windows, Linux, Docker

## LICENSE

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<b>Big Data Analysis Engineer</b>	<b>[Details on the license]</b> <ul style="list-style-type: none"><li>• License Number: BAE-003002950 (Dec. 31, 2021)</li><li>• Relevant Government Ministries: Ministry of Science and ICT &amp; Statistics Korea</li><li>• Implementing Agency: Korea Data Agency</li></ul>
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## TEACHING EXPERIENCES

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### KAIST

Teaching Assistant, Fall 2024, CoE491: Smart Mobility Design for Designer, Engineer, and Data Scientist  
(Practice Codes: [https://www.smartdesignlab.org/teaching/dl\\_kaist\\_coe](https://www.smartdesignlab.org/teaching/dl_kaist_coe))

## PUBLICATIONS

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\* corresponding author, † equal contribution

### Journal Papers (International)

3. **Lee, D.**, and Kang, N.\*, “Generative Model-driven Design Optimization to Address Small Data Challenges in Manufacturing (tentative title)”, (In Preparation)
2. **Lee, D.**<sup>†</sup>, Lee, U.<sup>†</sup>, Shin, J., Lee, Y.\*, and Kang, N.\*, “Multi-scale and Multi-physics Design Optimization for EVs (tentative title)”, (In Preparation)
1. **Lee, D.**, Yang, S., Oh, J., Cho, S., Kim, S., and Kang, N.\*, “AI-powered Digital Twin of the Ocean: Reliable Uncertainty Quantification for Real-time Wave Height Prediction with Deep Ensemble”, (Under Review)

### Conference Proceeding (Korean)

13. **Lee, D.**, and Kang, N.\* (2025) “소량 데이터 문제 극복을 위한 파운데이션 모델 활용 위상 최적화”, 대한기계학회 CAE 및 응용역학부문 2025 년도 춘계학술대회
12. **Lee, D.**, Kim, S., Kim, J., Cho, S., and Kang, N.\* (2024) “파력발전시스템의 연간 에너지 생산량 예측 모델을 위한 베이지안 하이퍼파라미터 최적화에 대한 연구”, 대한기계학회 2024 년 학술대회
11. **Lee, D.**, Yang, S., Oh, J., Cho, S., Kim, S., and Kang, N.\* (2024) “파력발전시스템의 디지털 트윈을 위한 딥러닝 기반 실시간 수위 예측의 불확실성 정량화에 대한 연구”, 대한기계학회 CAE 및 응용역학부문 2024 년도 춘계학술대회
10. **Lee, D.**, Oh, J., Cho, S., and Kang, N.\* (2023) “도메인 지식 기반 딥러닝을 활용한 불규칙 시계열 데이터 실시간 예측 연구: OWC-WEC 시스템 사례”, 대한기계학회 2023 년 학술대회
9. **Lee, D.**, Oh, J., Kim, K., Cho, S., and Kang, N.\* (2023) “LSTM 을 이용한 진동수주형 파력발전장치 수주높이 실시간 예측 연구”, 대한기계학회 CAE 및 응용역학부문 2023 년도 춘계학술대회
8. Park, M., Sohn, J., **Lee, D.**, (2021) “시뮬레이션용 오픈 아키텍처 적용 사례 연구”, 한국군사과학기술학회 종합학술대회, pp. 1561-1562.
7. Lee, D., **Lee, D.**, (2021) “해외사업 기반의 상태기반정비 (CBM) 적용대상 선정 프로세스 연구”, 한국군사과학기술학회 종합학술대회, pp. 1501-1502.
6. **Lee, D.**, Sung, R., Lee, D., (2021) “호주 LAND400 Ph.3 사업기반 ADDIE 모델을 활용한 군 교육훈련 개발방안 연구”, 한국군사과학기술학회 종합학술대회, pp. 1499-1500.
5. Sohn, J., Park, M., **Lee, D.**, (2021) “효과적인 교육 훈련을 위한 과학화 훈련 발전방향에 대한 고찰”, 한국군사과학기술학회 종합학술대회, pp. 1444-1445.
4. **Lee, D.**, Sohn, J., Park, M., (2020) “ADDIE 모델을 활용한 군 교육 콘텐츠 개발방안 연구”, 한국군사과학기술학회 종합학술대회, pp. 1873-1874.
3. Park, M., Sohn, J., **Lee, D.**, (2020) “훈련 시스템의 개방형 아키텍처 적용에 관한 연구”, 한국군사과학기술학회 종합학술대회, pp. 1851-1852.

2. Sohn, J., Park, M., **Lee, D.**, (2020) “전투차량 수출사업 훈련시스템 요구사항에 대한 고찰”, 한국군사과학기술학회 종합학술대회, pp. 1837-1838.
1. Lee, D., **Lee, D.**, Lee, S., (2018) “사용자 중심의 창정비 종합군수지원요소 식별 및 적용방안에 대한 연구”, 한국군사과학기술학회 종합학술대회, pp. 1983-1984.