

DONGEON LEE (이동언)

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RESEARCH INTERESTS

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

EDUCATION

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)
- Received Academic Excellence Scholarship for all semesters
(Incl. **National Science & Technology Scholarship**)
- Graduated **Summa Cum Laude** (GPA: 4.20 / 4.5)



PROFESSIONAL EXPERIENCE

Hanwha Defense (Currently Hanwha Aerospace) Changwon, Korea
Associate Research Engineer, ILS (Integrated Logistics Support) Center, Research Institute
Dec. 2016
~ May 2022



KAIST NQe (Nuclear & Quantum Engineering) Internship Program Daejeon, Korea
Intern Researcher, NPNP (Nuclear Power and Propulsion Laboratory)
July 2015



RESEARCH PROJECT

- Mar. 2023
~ Present **Development of fundamental technology for virtual product design to analyze suitable areas for renewable ocean energy**
Sponsored by KRISO (Korea Research Institute of Ships & Ocean Engineering)
• Role: Project Leader
- Mar. 2023
~ July 2023 **Real-time prediction of wave height using AI for digital twin of wave energy converter**
Sponsored by KRISO (Korea Research Institute of Ships & Ocean Engineering)
• Role: Project Leader
- Nov. 2019
~ May 2022 **Development of Redback IFV ILS (Integrated Logistics Support) elements (CBM⁺ / Training (VR/AR))**
Sponsored by CoA (Commonwealth of Australia) & HDA (Hanwha Defense of Australia)
• Role: Project Engineer
- Dec. 2016
~ Oct. 2019 **Development of K21 IFV (Infantry Fighting Vehicle) depot maintenance elements**
Sponsored by ROK (Republic of Korea) Army
• Role: Project Engineer
- July 2015 **Verification of the GAMMA⁺ code with the supercritical CO₂(S-CO₂) compressor test data about the accident scenarios which are related to cooling water loop**
Sponsored by KAIST NQe NPNP
• Advisor: Prof. Jeongik Lee
• Role: Intern Researcher

TECHNICAL SKILLS

Programming Language: Python, MATLAB
Operating System: Linux, Docker, Windows
Framework: PyTorch, TensorFlow

LICENSE

Big Data Analysis Engineer **[Details on the license]**
• License Number: BAE-003002950 (Dec. 31, 2021)
• Relevant Government Ministries: Ministry of Science and ICT & Statistics Korea
• Implementing Agency: Korea Data Agency

TEACHING EXPERIENCES

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)

PUBLICATIONS

* 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.**[†], Lee, U.[†], 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)

9. **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
8. **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
7. **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
6. **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
5. Lee, D., **Lee, D.**, (2021) “해외사업 기반의 상태기반정비 (CBM) 적용대상 선정 프로세스 연구”, 한국군사과학기술학회, pp. 1501-1502.
4. **Lee, D.**, Sung, R., Lee, D., (2021) “호주 LAND400 Ph.3 사업기반 ADDIE 모델을 활용한 군 교육훈련 개발방안 연구”, 한국군사과학기술학회, pp. 1499-1500.
3. Park, M., Sohn, J., **Lee, D.**, (2020) “훈련 시스템의 개방형 아키텍처 적용에 관한 연구”, 한국군사과학기술학회, pp. 1851-1852.
2. Sohn, J., Park, M., **Lee, D.**, (2020) “전투차량 수출사업 훈련시스템 요구사항에 대한 고찰”, 한국군사과학기술학회, pp. 1837-1838.
1. Lee, D., **Lee, D.**, Lee, S., (2018) “사용자 중심의 창정비 종합군수지원요소 식별 및 적용방안에 대한 연구”, 한국군사과학기술학회, pp. 1983-1984.