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RESEARCH INTERESTS

- **AI-based Design** / Generative Design / Data-driven Design / Deep Learning/ Machine Learning
- **Design Optimization**/ Multidisciplinary Design Optimization/ Simulation-based Optimization
- **Design for Market Systems**/ Consumer Preference Models/ Big Data Analysis
- **Smart Mobility**/ Shared Autonomous Electric Vehicle/ Personal Mobility
- **Human-Computer Interaction**/ User Experience

EDUCATION

University of Michigan	Ann Arbor, MI
Ph.D. Design Science (Mechanical Engineering + Marketing)	2011 – 2014
Co-advisors: Prof. Panos Papalambros, Prof. Fred Feinberg	
Seoul National University	Seoul, Korea
M.S. Technology and Management	2005 – 2007
B.S. Mechanical and Aerospace Engineering	2000 – 2005

ACADEMIC APPOINTMENTS

Sookmyung Women's University	Seoul, Korea
Assistant Professor, Mechanical Systems Engineering	2018 – Present
KAIST	Daejeon, Korea
Assistant Professor, K-School	2016 – 2018
University of Michigan	Ann Arbor, MI, USA
Research Fellow and Adjunct Lecturer, Mechanical Engineering	2014 – 2016

INDUSTRIAL EXPERIENCE

Hyundai Motor Company	Jeonbuk, Korea
Research Engineer, R&D Center	2007 – 2010

AWARDS

• Young Scientist Award, ASSMO (Asian Society for Structural and Multidisciplinary Optimization)	2020
• 미래기술상, 한국전산구조공학회	2019
• Altair Fellow, Altair	2015
• Dow Distinguished Award, Dow Sustainability Fellows, University of Michigan	2014

PROFESSIONAL SERVICE

- 부단장 - LINC+ 4차산업혁명 혁신선도대학 (숙명여대)
- Associate Editor - Journal of Mechanical Science and Technology (JMST) -
- CAE 및 응용역학부문 총무이사 - Korean Society of Mechanical Engineers (KSME)
- 인공지능머신연구회 이사 - Korean Society of Mechanical Engineers (KSME)
- 인공지능소사이어티 이사 - Korean Institute of Information Scientists and Engineers (KIISE)

• 논문집편집위원회 편집위원 - Computational Structural Engineering Institute of Korea (COSEIK)
• Local Organizing Committee - ACSMO2020
• International Committee - PHMAP2021

MEMBERSHIPS

• Korean Society of Mechanical Engineers (KSME)
• Korean Institute of Information Scientists and Engineers (KIISE)
• Computational Structural Engineering Institute of Korea (COSEIK)
• Korean Society for Design Optimization (KSDO)
• Korean Society for Prognostics and Health Management (KSPHM)
• American Society of Mechanical Engineers (ASME)
• Asian Society for Structural and Multidisciplinary Optimization (ASSMO)
• International Society for Structural and Multidisciplinary Optimization (ISSMO)
• Design Society

TEACHING EXPERIENCES

Sookmyung Women's University   2018 - Present
  • Solid Mechanics (Undergraduate course)
  • Machine Learning and Practice (Undergraduate course)
  • Engineering Design and Practice (Undergraduate course)
  • Capstone Design (Undergraduate course)
  • Automotive Engineering (Undergraduate course)
  • Engineering Mathematics (Undergraduate course)
  • Programming Basics and Practice (Undergraduate course)

  • Artificial Intelligence and Mechanical Engineering (Graduate course)
  • Deep Learning and Engineering Design (Graduate course)
  • Intelligent Design Automation (Graduate course)
  • Design Optimization (Graduate course)
  • Multidisciplinary Design Optimization (Graduate course)
  • Advanced Intelligent Vehicles (Graduate course)
  • Interdisciplinary Vehicle Design (Graduate course)
  • Mechanical Engineering Seminar: Advanced Deep Learning (Graduate course)

KAIST   2016 - 2018
  • Advanced Multidisciplinary Capstone Design (Graduate course)
  • Multidisciplinary Capstone Design I (Undergraduate course)
  • Multidisciplinary Capstone Design II (Undergraduate course)
  • Design Thinking for Startup (Undergraduate and graduate course)
  • Startup Management Practice (Graduate course)
  • Entrepreneurship (Graduate course)
  • Capstone Design I (Undergraduate course) - Guest
  • Capstone Design II (Undergraduate course) - Guest

University of Michigan   2012 – 2016
  • Design Optimization (Graduate course)
  • Analytical Product Design (Graduate course) - Guest
  • Product Design Process (Graduate course) - Guest
  • Design and Manufacturing (Undergraduate course) – Guest

*corresponding author

Journal Papers under Review (International)

[9] Yoo, S. and **Kang, N.*** "Explainable Artificial Intelligence for Manufacturing Cost Estimation and Machining Feature Visualization", *Expert Systems with Applications*, arXiv:2010.14824.

[8] Kim, S., Lee, U., Lee, I. and **Kang, N.*** "Idle Vehicle Relocation Strategy through Deep Learning for Shared Autonomous Electric Vehicle System Optimization", *Applied Energy*, arXiv:2010.09847.

[7] Jang, S. and **Kang, N.*** "Generative Design by Reinforcement Learning: Maximizing Diversity of Topology Optimized Designs", *Computer-Aided Design*, arXiv:2008.07119.

[6] Yoo, S., Lee, S., Kim, S., Hwang, K. H, Park, J. H., **Kang, N.*** "Integrating Deep Learning into CAD/CAE System: Case Study on Road Wheel Design Automation", *Structural and Multidisciplinary Optimization*, arXiv:2006.02138.

[5] **Kang, N.**, Ren, Y., Feinberg, F. M., and Papalambros, P. Y. "Form + Function: Optimizing Aesthetic Product Design via Adaptive, Geometrized Preference Elicitation", *Marketing Science*, arXiv:1912.05047.

[4] Yoo, S., Lee, S., Kim, S., Kim, E, Hwangbo, H., and **Kang, N.*** "A Study on Anxiety about Using Robo-taxis: HMI Design for Anxiety Factor Analysis and Anxiety Relief Based on Field Tests", *Human-Computer Interaction*, arXiv:2002.09155.

[3] Lee, S., Yoo, S., Kim, S., Kim, E, and **Kang, N.*** "An Effect of Robo-taxi User Experience on User Acceptance: Field Test Data Analysis", *Transportation Research Record: Journal of the Transportation Research Board*, arXiv:2006.16870.

[2] Lee, K. J., **Kang, N.***, Kokkolaras, M., and Papalambros, P. Y. "Design Optimization of a Hybrid Electric Vehicle Cooling System Considering Performance and Packaging", *International Journal of Vehicle Design*

[1] Lee, G., Rhim, J., **Kang, N.**, and Lee, J. "Moral Reasonings in Autonomous Vehicles Moral Dilemma Situations from Human Driver's Perspective: Values and Themes", *Science and Engineering Ethics*

Journal Papers (International)

[19] Lee, U., **Kang, N.***, and Lee, I. (2020) "Choice Data Generation using Usage Scenarios and Discounted Cash Flow Analysis", *Journal of Choice Modelling*, 37, 100250.

[18] Jung, Y., Lee, J., Lee, M., **Kang, N.***, and Lee, I. (2020) "Probabilistic Analytical Target Cascading using Kernel Density Estimation for Accurate Uncertainty Propagation", *Structural and Multidisciplinary Optimization*, Vol. 61, No. 5, pp. 2077-2095.

[17] Kim, S., Chang, J., Park, H. H., Song, S. U., Cha, C. B., Kim, J. W., **Kang, N.*** (2020) "Autonomous Taxi Service Design and User Experience", *International Journal of Human-Computer Interaction*, Vol. 36, No. 5, pp. 429-448.

[16] Lee, U., **Kang, N.***, and Lee, I. (2020) "Shared Autonomous Electric Vehicle Design and Operations Under Uncertainties: A Reliability-based Design Optimization Approach", *Structural and Multidisciplinary Optimization,* Vol. 61, pp. 1529–1545.

[15] Oh, S., Jung, Y., Kim, S., Lee, I., and **Kang, N.*** (2019) "Deep Generative Design: Integration of Topology Optimization and Generative Models", *Journal of Mechanical Design*, Vol. 141, No. 11, 111405.

[14] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. (2019) "Designing Profitable Joint Product–Service Channels: Case Study on Tablet and eBook Markets", *Design Science*, Vol. 5, e12.

[13] Koh, S. R., Hur, S. H., and **Kang, N.*** (2019) "Feasibility Study on the Korean Government's Hybrid Conversion Project of Small Diesel Trucks for Parcel Delivery Services", *Journal of Cleaner Production,* Vol. 232, pp.559-574.

[12] Lee, U., **Kang, N.***, and Lee, I. (2019) "Selection of Optimal Target Reliability in RBDO through Reliability-based Design for Market Systems (RBDMS) and Application to Electric Vehicle Design", *Structural and Multidisciplinary Optimization*, Vol. 60, No. 3, pp.949–963.

[11] **Kang, N.**, Bayrak, A., and Papalambros, P. Y. (2018) "Robustness and Real Options for Vehicle Design and Investment Decisions under Gas Price and Regulatory Uncertainties", *Journal of Mechanical Design*, Vol. 140, No. 10, 101404.

[10] Jung, Y., **Kang, N.**, and Lee I. (2018) "Modified Augmented Lagrangian Coordination and Alternating Direction Method of Multipliers with Parallelization in Non-hierarchical Analytical Target Cascading", *Structural and Multidisciplinary*

Optimization, Vol. 58, No. 2, pp. 555-573.

[9] **Kang, N.**, Burnap, A., Kim, K. H., Reed, M. P., and Papalambros, P. Y. (2017) "Influence of Seat Form and Comfort Rating on Willingness to Pay", *International Journal of Vehicle Design*, Vol. 75, Nos. 1/2/3/4, pp.75-90.

[8] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. (2017) "Autonomous Electric Vehicle Sharing System Design", *Journal of Mechanical Design*, Vol. 139, No. 1, 011402.

[7] D'Souza, K., Bayrak, A. E., **Kang, N.**, Wang, H., Altin, B., Barton, K., Hu, J., Papalambros, P. Y., Epureanu, B. I., and Gerth, R. (2016) "An Integrated Design Approach for Evaluating the Effectiveness and Cost of a Conventional and Modular Fleet", *Journal of Defense Modeling and Simulation*, Vol. 13, No. 4, pp. 381-397.

[6] Bayrak, A., **Kang, N.***, and Papalambros, P. Y. (2016) "Decomposition Based Design Optimization of Hybrid Electric Powertrain Architectures: Simultaneous Configuration and Sizing Design", *Journal of Mechanical Design*, Vol. 138, No. 7, 071405

[5] **Kang, N.**, Ren, Y., Feinberg, F. M., and Papalambros, P. Y. (2016) "Public Investment and Electric Vehicle Design: A Model-based Market Analysis Framework with Application to a USA-China Comparison Study", *Design Science*, Vol. 2, e6.

[4] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. (2015) "Integrated Decision Making in Electric Vehicle and Charging Station Location Network Design", *Journal of Mechanical Design,* Vol. 137, No. 6, 061402.

[3] **Kang, N.**, Kokkolaras, M., Papalambros, P. Y., Park, J., Na, W., Yoo, S., and Featherman, D. (2014) "Optimal Design of Commercial Vehicle Systems Using Analytical Target Cascading", *Structural and Multidisciplinary Optimization*, Vol. 50, No. 6, pp. 1103-1114.

[2] **Kang, N.**, Kokkolaras, M., and Papalambros, P. Y. (2014) "Solving Multiobjective Optimization Problem Using Quasi-separable MDO Formulations and Analytical Target Cascading", *Structural and Multidisciplinary Optimization*, Vol. 50, No. 5, pp. 849-859.

[1] **Kang, N.**, Kim, J. and Park, Y. (2007) "Integration of Marketing Domain and R&D Domain in NPD Design Process", *Industrial Management & Data Systems,* Vol. 107, No. 6, pp. 780-801.

Journal Papers (Korean)

[4] **Kang, N.** (2020) "인공지능과 최적설계", 전산구조공학, 33(1), pp. 20-22.

[3] Lee, G., Rhim, J., **Kang, N.**, Lee, J. (2020) "자율주행 자동차의 딜레마 시나리오에서 운전자 관점의 도덕 코드", Korea Institute of Design Research Society, 5(1), pp. 126-135.

[2] **Kang, N.** (2019) "제너레이티브 디자인과 인공지능 기반 설계 자동화", 기계저널, Vol. 59, No. 8, pp. 24-28.

[1] Kwon, Y., Byun, J., and **Kang, N.** (2019) "소형 경유 트럭에 대한 친환경 트럭으로의 개조 기술 선택에 관한 연구", 대한교통학회지, Vol. 37, No. 2, pp. 135-147.

Conference Proceedings (International)

[16] **Kang, N.***, Yoo, S., Lee, S., Kim, S., Hwang, K. H., Park, J. H., Lee, S., Kang, M. K., Kim, C, and Jung, C. (2020) "Deep Learning-based CAD/CAE Framework", *Asian Congress of Structural and Multidisciplinary Optimization 2020 (ACSMO2020)*.

[15] Yoo, S. and **Kang, N.*** (2020) "Predicting Manufacturing Cost of CAD Models Using 3D CNN", *Asian Congress of Structural and Multidisciplinary Optimization 2020 (ACSMO2020)* (Poster).

[14] Kim, S., Lee, S., and **Kang, N.*** (2019) "AI-based Design Automation: Generative Design + Generative Models", *KSME-JSME Joint Symposium on Computational Mechanics & CAE*, Kawagoe, Japan, Sep 17-18.

[13] Yoo, S., Lee, S., Kim, S., and **Kang, N.*** (2019) "Gender Differences in User Experience of Autonomous Taxi Service", *The 3rd Cultural DNA Workshop 2019*, Daejeon, Korea, June 25.

[12] Oh, S., Jung, Y., Lee, I., and **Kang, N.*** (2018) "Design Automation by Integrating Generative Adversarial Networks and Topology Optimization", *Proceedings of the ASME 2018 International Design & Engineering Technical Conferences*, Quebec City, Quebec, Canada, Aug 26-Aug 29, DETC2018-85506.

[11] Lee, U., **Kang, N.***, and Lee, I. (2017) "Reliability-based Design Optimization (RBDO) for Electric Vehicle Market Systems", *Proceedings of the ASME 2017 International Design & Engineering Technical Conferences*, Charlotte, Aug 6-Aug 9, DETC2017-68045.

[10] Jung, Y., **Kang, N.**, and Lee I. (2017) "Convergence Strategy for Parallel Solving of Analytical Target Cascading with Augmented Lagrangian Coordination", *Proceedings to the 12th World Congress on Structural and Multidisciplinary Optimization*, Braunschweig, Germany, June 5-June 9.

[9] Min, D. A., **Kang, N.**, Rhim, J., and Lee, J. H. (2017) "A Sense of Dichotomy in Household Space and Smartphone", *The 2nd Cultural DNA Workshop 2017*, Daejeon, Korea, Jan 13.

[8] **Kang, N.**, Bayrak, A., and Papalambros, P. Y. (2016) "A Real Options Approach to Hybrid Electric Vehicle Architecture Design for Flexibility", *Proceedings of the ASME 2016 International Design & Engineering Technical Conferences*, Charlotte, Aug 21-Aug 24, DETC2016-60247.

[7] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. (2015) "Autonomous Electric Vehicle Sharing System Design", *Proceedings of the ASME 2015 International Design & Engineering Technical Conferences*, Boston, Aug 2-Aug 5, DETC2015-46491 (*Dow Distinguished Award*)

[6] Bayrak, A., **Kang, N.***, and Papalambros, P. Y. (2015) "Decomposition Based Design Optimization of Hybrid Electric Powertrain Architectures: Simultaneous Configuration and Sizing Design", *Proceedings of the ASME 2015 International Design & Engineering Technical Conferences*, Boston, Aug 2-Aug 5, DETC2015-46861 (*corresponding author)

[5] **Kang, N.**, Emmanoulopoulos, M., Ren, Y., Feinberg, F. M., and Papalambros, P. Y. (2015) "A Framework for Quantitative Analysis of Government Policy Influence on Electric Vehicle Market", *Proceedings of the 20th International Conference on Engineering Design*, Milan, Italy, Jul 27-Jul 30, ISBN: 978-1-904670-68-1.

[4] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. (2014) "Integrated Decision Making in Electric Vehicle and Charging Station Location Network Design", *Proceedings of the ASME 2014 International Design & Engineering Technical Conferences*, Buffalo, Aug 17-Aug 20, doi:10.1115/DETC2014-35270.

[3] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. (2013) "A Framework for Enterprise-driven Product Service Systems Design", *Proceedings of the 19th International Conference on Engineering Design*, Seoul, Korea, Aug 4-Aug 7, ISBN: 978-1-904670-47-6.

[2] **Kang, N.**, Kokkolaras, M., and Papalambros, P. Y. (2013) "Solving Multiobjective Optimization Problem Using Quasi-separable MDO Formulations and Analytical Target Cascading", *Proceedings to the 10th World Congress on Structural and Multidisciplinary Optimization*, Orlando, May 19-24.

[1] **Kang, N.**, Kokkolaras, M., Papalambros, P. Y., Park, J., Na, W., Yoo, S., and Featherman, D. (2012) "Optimal Design of Commercial Vehicle Systems Using Analytical Target Cascading", *Proceedings of the 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Indianapolis, Sep 17-19, AIAA 2012-5524.

Conference Proceedings (Korean)

[27] Kim, E., Ryu, H., Oh, H., and **Kang, N.*** (2020) "딥러닝을 통한 퍼스널 모빌리티 운전자 부주의 판별", 대한기계학회 2020년 학술대회.

[26] Lee, S. and **Kang, N.*** (2020) "딥러닝 기반 디자인 선호도 예측 및 추천시스템: 자동차 휠 사례", 대한기계학회 2020년 학술대회.

[25] Kim, S., Lee, U., Lee, I. and **Kang, N.*** "딥러닝을 통한 유휴 차량 재배치: 공유형 자율주행전기차 시스템 최적화", 대한기계학회 2020년 학술대회.

[24] Lee, G., Choi, M.A., and **Kang, N.*** (2020) "자율주행 택시 승객 경험의 분위기", 대한기계학회 2020년 학술대회.

[23] Nguyen, N.L., Jin, A., **Kang, N.**, and Jang, G. (2020) "딥러닝을 이용한 박판 빔프레임 모델의 조인트 스프링 강성 예측", 대한기계학회 2020년 학술대회.

[22] Yoo, S. and **Kang, N.*** (2020) "도메인 적응을 이용한 설계성능 예측 기초 연구", 대한기계학회 2020년 학술대회 (포스터)

[21] Jwa, M.Y., Kim, E., Lee, G., Lee, J.H., Jeon, H., Seo, W., Lee, K., and **Kang. N.*** (2020) "데이터 기반의 차량 충돌 성능 목표 수립에 대한 기초 연구", 대한기계학회 2020년 학술대회 (포스터)

[20] Shin, D., Shin, S., and **Kang, N.*** (2020) "서스펜션의 제너레이티브 디자인에 대한 기초 연구", 대한기계학회 2020년 학술대회 (포스터)

[19] Jang, S. and **Kang, N.*** (2020) "딥러닝을 통한 구조설계안 다양성 최대화", 2020 한국전산구조공학회 정기학술대회.

[18] Yoo, S. and **Kang, N.*** (2020) "설명가능한 인공지능 기반의 3D CAD 모델 제조원가 예측", 대한기계학회 CAE 및 응용역학부문 2020년도 춘계학술대회.

[17] Yoo, S., Lee, S., Kim, S., Hwang, K. H, Park, J. H., and **Kang, N.*** (2020) "딥러닝 기반의 CAD/CAE 프레임워크", 대한기계학회 CAE 및 응용역학부문 2020년도 춘계학술대회.

[16] Kim, E., Youn, Y., Park, S., and **Kang, N.*** (2020) "비정치적인 질문으로 정치성향 예측하기: CNN 기반 설문 빅데이터 분석 기법", Korea Computer Congress (KCC).

[15] Kim, E., Chung, T., Jeong, E., Ryu, H., Oh, H., and **Kang, N.*** (2020) "딥러닝 기반 퍼스널모빌리티 사용 패턴 분류", 한국PHM학회 정기학술대회 (포스터)

[14] **Kang, N.** (2019) "Intelligent Design Automation: AI-based Generative Design", 2019 Winter Workshop of KSCM

[13] Jang, S., Youn, Y., and **Kang, N.*** (2019) "강화학습을 이용한 제너레이티브 디자인", 대한기계학회 2019년 학술대회

[12] Yoo, S., Lee, S., Kim, S., Kim, E., and **Kang, N.*** (2019) "자율주행 불안감 해소를 위한 Human-AI Interaction 설계", 대한기계학회 2019년 학술대회

[11] Lee, S., Yoo, S., Kim, S., Kim, E., and **Kang, N.*** (2019) "사용자 경험 데이터 주도의 자율주행 택시 기술 수용성 분석", 대한기계학회 2019년 학술대회 (포스터)

[10] Kim, S. and **Kang, N.*** (2019) "서울시 자율주행 택시 서비스 디지털트윈 설계를 위한 사전 연구: 딥러닝과 빅데이터를 이용한 승객 수요 예측", 대한기계학회 2019년 학술대회 (포스터)

[9] Kim, S., Lee, S., Yoo, S., Kim, E., and **Kang, N.*** (2019) "Generative Design: Engineering Design + Deep Learning", The AI Korea 2019 컨퍼런스 (포스터).

[8] Kim, S., Lee, S., and **Kang, N.*** (2019) "딥러닝 기반 제너레이티브 디자인", 대한기계학회 CAE 및 응용역학부문 2019년도 춘계학술대회.

[7] Kim, S. and **Kang, N.*** (2019) "이상치 탐지를 위한 오토인코더와 CNN의 비교", 한국PHM학회 정기학술대회 (포스터).

[6] **Kang, N.** (2019) "최적 설계 분야의 딥러닝 연구 동향", 한국전산구조공학회 정기학술대회.

[5] Lee, U., **Kang, N.**, and Lee, I. (2018) "Improving the Accuracy of Consumer Preference Estimation Using Economic Simulation Model", 한국전산역학회.

[4] Lee, U., **Kang, N.**, and Lee, I. (2017) "전기차 시장을 고려한 신뢰성 기반 최적 설계", 대한기계학회, pp. 89-90.

[3] Jung, Y., **Kang, N.**, and Lee, I. (2017) "Augmented Lagrangian Coordination을 이용한 Analytical Target Cascading 에서의 Parallelization 도입 및 수렴전략 개발", 대한기계학회, pp. 188-189.

[2] Kim, J., **Kang, N.**, and Park, Y. (2009) "컨조인트와 트리즈의 통합에 관한 연구", 기술경영경제학회, pp. 627-647.

[1] **Kang, N.**, Kim, J. and Park, Y. (2006) "신제품 개발 프로세스에서 마케팅 영역과 제조 영역의 통합적 설계 : Conjoint 분석과 Taguchi 방법의 순차적 결합", 한국경영과학회, Vol. 2006, No. 5, pp. 365-372.

Book Chapters

[2] Min, D. A., **Kang, N.**, Rhim, J., and Lee, J. H. (2018) "A Sense of Dichotomy in Household Space and Smartphone", Computational Studies on Cultural Variation and Heredity, pp. 95-105, Springer, Singapore.

[1] Papalambros, P. Y. and **Kang, N.** (2015) "Systems Design - Chapter 8", Principles of Optimal Design (3rd Edition), Cambridge University Press, New York.

PATENTS

[9] "차량의 휠 성능 예측 장치 및 그 방법", 출원번호: 10-2020-0097470.

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[7] "전기 동력 자동차의 운전자를 위한 에너지원 저장수단의 충전 및 교체 정보 제공 방법 및 시스템, 전기 동력 자동차 충전소의 서비스 제공 방법 및 시스템, 및 전기 동력 자동차의 교체식 에너지원 저장수단 공급 서비스 방법", 출원번호: PCT/KR2020/000074.

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[5] "무인 택시 시스템을 이용한 지역 광고 시스템 및 그 방법", 출원번호: 10-2018-0120545.

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[3] "향수 제조 시스템", 출원번호: 10-2018-0013024.

[2] "스마트 디퓨저 시스템", 출원번호: 10-2018-0013023.

[1] "프로젝트 과정 공유시스템 및 방법", 출원번호: 10-2017-0098077.

INVITED PRESENTATIONS

- 현대자동차 NGV, "HMC 연구 내용 사례 및 AI 활용 타이어 성능 데이터 확보 방안 제언", Nov 2020
- 위니아딤채, "인공지능 기초이론", Nov 2020
- LG그룹, 임원세미나, "AI 기반 Generative Design", Oct 2020
- KAIST, 기계공학과, "인공지능 기반 설계", Oct 2020
- 한양대학교, 미래자동차공학과, "인공지능 기반 설계", Oct 2020
- 현대자동차, 연구위원 기술포럼, "AI 기반 Generative Design 활용 사례", Sep 2020
- 서울대학교, 기계항공공학부, "인공지능 기반 설계", Sep 2020
- 선박해양플랜트연구소, "인공지능 기반 제너레이티브 디자인", Sep 2020
- 세종대학교, 기계공학과, "인공지능 기반 설계", Aug 2020
- 한국건설기술연구원, "딥러닝과 설계", July 2020
- LG전자, 개발 DX(digital transformation) Committee, "AI를 활용한 Generative Design 기술 및 적용사례", Jun 2020
- 현대자동차, 버추얼이노베이션리서치랩, "AI + 설계", Jun 2020
- LG전자, 생산기술원, "Generative Design by AI", Jun 2020
- KAIST, 조천식녹색교통대학원, "AI-based Future Mobility Design", Jun 2020
- 아주대, 기계공학과, "AI + 설계", Jun 2020
- 현대자동차, 현가조향리서치랩, "AI 기반 서스펜션 부품 형상 자동 설계", May 2020
- 서울대학교, 기계항공공학부, "AI + 설계", May 2020
- POSTECH, 산업경영공학과, "인공지능 기반 설계 자동화", MAY 2020
- 현대자동차, DEC추진TFT, "디자인&엔지니어링 협업 위한 고객중심 의사결정방법", Mar 2020
- 한국전산구조공학회, 신기술강습회, "딥러닝 주요 모델과 구조설계 데이터를 이용한 실습", Feb 2020
- 서울대학교, 기계항공공학부, "Intelligent Design Automation: AI-based Generative Design", Jan 2020
- 부산대학교, 기계공학부, "Future Mobility Design by AI", Jan 2020
- 한국기계연구원, KIMM AI 윈터스쿨, "비지도 학습", Dec 2019
- ETRI, 지능제조융합연구실, "인공지능 기반 제품 설계와 최신 연구 동향", Nov 2019
- 현대자동차, 조향시스템개발실, "차량 설계와 딥러닝 응용 연구 동향", Nov 2019
- 한국전산역학회, 초청강연, "지능형 설계 자동화: 인공지능 기반 제너레이티브 디자인", Nov 2019
- KAIST, 인류세 연구센터, "인공지능 기반 미래 모빌리티 설계", Nov 2019
- KAIST, 기계공학과, "기계공학 기반 인공지능: 제너레이티브 디자인", Oct 2019
- Autodesk, 제조업에서 AI의 활용 분야와 솔루션 세미나, "딥러닝기반 제너레이티브 디자인", Sep 2019
- 한국기계연구원, KIMM AI 서머스쿨, "생성 모델의 이론과 실습", Aug 2019
- 대한기계학회, 인공지능머신연구회 2019년 서머스쿨, "제너레이티브 디자인", Aug 2019
- 한국기계연구원, "제너레이티브 디자인과 인공지능 기반 설계 자동화"(2차), July 2019

- 현대자동차, 해석최적화 경연대회 기조강연, "딥러닝 기반 최적설계 동향 및 제너레이티브 디자인", Jun 2019
- 한국기계연구원, 4차산업혁명R&D센터, "제너레이티브 디자인과 인공지능 기반 설계 자동화", Jun 2019
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- 한국최적설계학회, 초청강연, "딥러닝 기반 제너레이티브 디자인", Jan 2019
- 한국정보과학회, 초청강연, "심미성 + 기능성: 머신러닝을 통한 제품 설계", Dec 2018
- 한국CDE학회, AI+Engineering 튜토리얼, "딥러닝을 통한 설계 자동화", Nov 2018
- University of Michigan, Design Science, Ann Arbor, "What is a Good Mechanical Design?", Sep 2018
- 한국전산구조공학회, 신기술강습회, "최적설계 이론과 컴포즈를 이용한 실습", Aug 2018
- KAIST, 미래교통 및 도시개발 최고위 리더십 과정, "창의적 디자인 사고", Jun 2018
- KAIST, 창업원, "스타트업을 위한 디자인 사고", Mar 2018
- KAIST, 산업디자인학과, "기업주도의 융합 설계", Apr 2017
- KAIST, 미래교통 및 도시개발 최고위 리더십 과정, "전기차 시장 시스템을 위한 설계", Apr 2017
- KAIST, 산업및시스템공학과, "기업가 주도의 디자인 사고", Dec 2016
- INFORMS, Annual Meeting, Philadelphia, "Design for EV Market Systems", Nov 2015
- 서울대학교, 기계항공공학부, "Design Science", May 2015
- 서울대학교, 산업공학과, "Design Science", May 2015
- KAIST, 기계공학과, "Design Science", May 2015
- KAIST, 문화기술대학원, "Design Science", Jun 2015
- 한양대학교, 기계공학부, "Design Science", Jun 2015
- Altair Engineering, Symposium, Ann Arbor, "Optimal Design of Commercial Vehicle Systems Using Analytical Target Cascading and HyperWorks", Apr 2015

REVIEWING SERVICE

- Journal of Mechanical Design
- Structural and Multidisciplinary Optimization
- Journal of Mechanical Engineering Science
- Design Science
- Research in Engineering Design
- Systems Engineering
- Journal of Manufacturing Science and Engineering
- International Journal of Vehicle Design
- Journal of Mechanical Science and Technology
- Applied Energy
- Computers in Human Behavior
- Mechanics Based Design of Structures and Machines
- Journal of Computational Design and Engineering
- Scientific Reports
- Transactions of the KSME A
- Journal of the HCI Society of Korea
- ASME International Design Engineering Technical Conference (IDETC)
- International Conference on Engineering Design (ICED)