NAMWOO KANG

Assistant Professor, Division of Mechanical Systems Engineering, Sookmyung Women's University
Room 301, Renaissance Plaza, 100 Cheongpa-ro 47-gil, Yongsan-gu, Seoul, 04310, Republic of Korea
E-mail: nwkang@sm.ac.kr, Web: SmartDesignLab.org
Tel: +82-2-710-9003

EDUCATION

University of Michigan — Ann Arbor, MI
Ph.D. Design Science (Mechanical Engineering + Marketing) — 2011 – 2014

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
Project Management & Process Design, R&D Center — 2007 – 2010

TEACHING EXPERIENCES

Sookmyung Women's University — 2018 - Present
- **Solid Mechanics** (Undergraduate course)
- **Engineering Mathematics** (Undergraduate course)
- **Programming Basics and Practice** (Undergraduate course)
- **Advanced Intelligent Vehicles: 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

RESEARCH PAPERS (Downloads are available at the web: SmartDesignLab.org)

Journal Papers under Review

[4] Koh, S. R., Hur, S. H., and **Kang, N.*** "Feasibility Study on the Korean Government's Hybrid Conversion Project of Small Diesel Trucks for Parcel Delivery Services" (*corresponding author)

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

[2] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. "Designing Profitable Joint Product-Service Channels"

[1] Lee, U., **Kang, N.***, and Lee, I. "Reliability-based Design for Market Systems (RBDMS): Case Study on Electric Vehicle Design" (*corresponding author)

Journal Papers

[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 (*corresponding author)

[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, doi:10.1017/dsj.2016.7.

[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.

Conference Proceedings (International)

[11] 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 (*corresponding author)

[10] 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 (*corresponding author)

[9] 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.

[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)

[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 (*corresponding author)

[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.

PROFESSIONAL AND INVITED PRESENTATIONS

- University of Michigan, Design Science, Ann Arbor, "Mechanical Design Meets Other Sciences" Sep, 2018
- Computational Structural Engineering Institute of Korea, "Design Optimization" Aug, 2018
- KAIST, Advanced Leadership Program for Future Transport and Urban Development, "Creative Design Thinking" Jun, 2018
- KAIST, Institution of Startup KAIST, "Design Thinking for Startup" Mar, 2018
- KAIST, Industrial Design, "Enterprise-driven Multidisciplinary Design" Apr, 2017
- KAIST, Advanced Leadership Program for Future Transport and Urban Development, "Design for EV Market Systems" Apr, 2017
- KAIST, Industrial & Systems Engineering, "Enterprise-driven Design Thinking" Dec, 2016
- INFORMS, Annual Meeting, Philadelphia, "Design for EV Market Systems" Nov, 2015
- Seoul National University, Mechanical Engineering, Korea, "Design Science" May, 2015
- Seoul National University, Industrial Engineering, Korea, "Design Science" May, 2015
- KAIST, Mechanical Engineering, Korea, "Design Science" May, 2015
- KAIST, Graduate School of Culture Technology, Korea, "Design Science" June, 2015
- Hanyang University, Mechanical Engineering, Korea, "Design Science" June, 2015
- Altair Engineering, Symposium, Ann Arbor, "Optimal Design of Commercial Vehicle Systems Using Analytical Target Cascading and HyperWorks" April, 2015

PROFESSIONAL SERVICE

Reviewing

- Journal of Mechanical Design
- 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
- Transactions of the KSME A
- ASME International Design Engineering Technical Conference (IDETC)
- International Conference on Engineering Design (ICED)

Memberships

- American Society of Mechanical Engineers (ASME)
- Korean Society of Mechanical Engineers (KSME)
- International Society for Structural and Multidisciplinary Optimization (ISSMO)
- Design Society