

# NAMWOO KANG

## Assistant Professor, K-School, KAIST

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## EDUCATION

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<b>University of Michigan</b> Ph.D. Design Science	Ann Arbor, MI 2011 – 2014
<b>Seoul National University</b> M.S. Technology and Management B.S. Mechanical and Aerospace Engineering	Seoul, Korea 2005 – 2007 2000 – 2005

## ACADEMIC APPOINTMENTS

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<b>KAIST</b> <ul style="list-style-type: none"><li>• <b>Joint Professor</b>, Mechanical Engineering</li><li>• <b>Assistant Professor</b>, K-School</li></ul>	Daejeon, Korea 2017 – Present 2016 – Present
<b>University of Michigan</b> <ul style="list-style-type: none"><li>• <b>Research Fellow and Adjunct Lecturer</b>, Mechanical Engineering</li></ul>	Ann Arbor, MI, USA 2014 – 2016

## INDUSTRIAL EXPERIENCE

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<b>Hyundai Motor Company</b> Project Management & Process Design, R&D Center	Jeonbuk, Korea 2007 – 2010
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## TEACHING EXPERIENCES

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<b>KAIST</b> <ul style="list-style-type: none"><li>• <b>Advanced Multidisciplinary Capstone Design</b> (KEI501, Graduate course)</li><li>• <b>Multidisciplinary Capstone Design I</b> (CD401, Undergraduate course)</li><li>• <b>Multidisciplinary Capstone Design II</b> (CD402, Undergraduate course)</li><li>• <b>Design Thinking for Startup</b> (KEI560, Undergraduate and graduate course)</li><li>• <b>Startup Management Practice</b> (KEI966, Graduate course)</li><li>• <b>Entrepreneurship</b> (CC010, Graduate course)</li><li>• <b>Capstone Design I</b> (ME400, Undergraduate course) - Guest</li><li>• <b>Capstone Design II</b> (ME401, Undergraduate course) - Guest</li></ul>	2016 - Present
<b>University of Michigan</b> <ul style="list-style-type: none"><li>• <b>Design Optimization</b> (ME555/MFG555, Graduate course)</li><li>• <b>Analytical Product Design</b> (ME455/DESCI501, Graduate course) - Guest</li><li>• <b>Product Design Process</b> (DESCI502, Graduate course) - Guest</li><li>• <b>Design and Manufacturing</b> (ME450, Undergraduate course) - Guest</li></ul>	2012 – 2016

### Journal Papers under Review

- [1] **Kang, N.**, Ren, Y., Feinberg, F. M., and Papalambros, P. Y. "Form + Function: Optimizing Aesthetic Product Design via Adaptive, Geometrized Preference Elicitation", *Marketing Science* (in preparation for 2nd review)
- [2] **Kang, N.**, Feinberg, F. M., and Papalambros, P. Y. "Designing Profitable Joint Product-Service Channels", *Design Science* (submitted)
- [3] **Kang, N.**, Bayrak, A., and Papalambros, P. Y. "A Real Options Approach to Hybrid Electric Vehicle Architecture Design for Flexibility", *Journal of Mechanical Design* (submitted)
- [4] Lee, U., **Kang, N.\***, and Lee, I. "Reliability-based Design for Market Systems (RBDMS): Case Study on Electric Vehicle Design", *Journal of Mechanical Design* (submitted) (\*corresponding author)

### Journal Papers

- [1] Jung, Y., **Kang, N.**, and Lee I. (2017) "Modified Augmented Lagrangian Coordination and Alternating Direction Method of Multipliers with Parallelization in Non-hierarchical Analytical Target Cascading", *Structural and Multidisciplinary Optimization* (accepted)
- [2] **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* (accepted)
- [3] **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.
- [4] 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.
- [5] 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)
- [6] **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.
- [7] **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.
- [8] **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.
- [9] **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.
- [10] **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)

- [1] 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)
- [2] 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.

- [3] **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.
- [4] **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*)
- [5] 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)
- [6] **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.
- [7] **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.
- [8] **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.
- [9] **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.
- [10] **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)

- [1] Lee, U., **Kang, N.\***, and Lee, I. (2017) "전기차 시장을 고려한 신뢰성 기반 최적 설계", 대한기계학회, pp. 89-90 (\*corresponding author)
- [2] Jung, Y., **Kang, N.**, and Lee, I. (2017) "Augmented Lagrangian Coordination을 이용한 Analytical Target Cascading에서의 Parallelization 도입 및 수렴전략 개발", 대한기계학회, pp. 188-189.
- [3] Kim, J., **Kang, N.**, and Park, Y. (2009) "컨조인트와 트리즈의 통합에 관한 연구", 기술경영경제학회, pp. 627-647.
- [4] **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.

### PROFESSIONAL AND INVITED PRESENTATIONS

- 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**

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### **Reviewing**

- Journal of Mechanical Design
- Journal of Mechanical Engineering Science
- Design Science
- Research in Engineering Design
- Systems Engineering
- 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

## **AWARD**

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- Dow Distinguished Award, Dow Sustainability Fellows, University of Michigan

2014