

Kuo-Hao Chang

Professor

Department of Industrial Engineering and Engineering Management

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Education

Ph.D. (2008), Industrial Engineering, Purdue University, U.S.A

M.S. (2001), Industrial Engineering and Engineering Management, National Tsing Hua University, Taiwan

B.B.A. (1998), Statistics, National Cheng Kung University, Taiwan

Research Interest

Big Data Analytics, Simulation Optimization, Monte Carlo Simulation, Applied Probability and Statistics

Employment

- Deputy director, National Science and Technology Center for Disaster Reduction (August 2020-present)
- Director, Dual Master Degree Program for Global Operation Management with Stony Brook University, National Tsing Hua University (August 2018-December 2019)
- Director, Division of General Affairs, Office of Global Affairs, National Tsing Hua University (February 2016-July 2018)
- Professor (2018-now), Associate Professor (2014-2018), Assistant Professor (2009 – 2014), Department of Industrial Engineering and Engineering Management, National Tsing Hua University
- Assistant Professor (January 2009 – May 2009), Department of Industrial and Management Systems Engineering, West Virginia University
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Editorial Service

- Editorial Board member, The IEEE Control Systems Society Conference (2019/7-present)
- Associate Editor, IEEE Transactions on Automation Science and Engineering (2017/7-present)
- Associate Editor, Asia-Pacific Journal of Operational Research (2017/3-present)
- Executive Editor, Journal of Industrial and Production Engineering (2012/7-2018/7)
- Guest Editor, Journal of Optimization, 2016/12
- Associate Editor, International Journal of Simulation and Process Modeling (2014/7-present)

Awards and Honors

- 2021 NCKU Outstanding Young Alumni Award (國立成功大學優秀青年校友)
- 2021 Industrial Engineering Medal by CIIE (中國工業工程學會工業工程獎章)
- 2019 Best Research Poster Award by Ministry of Science and Technology (科技部專題海報成果優等獎)
- 2019 Outstanding Research Award, Ministry of Science and Technology (科技部傑出研究獎)
- 2019 Outstanding Young Scholar Award by Ministry of Science and Technology (科技部優秀年輕學者計畫)
- 2017 IEEE Transactions on Semiconductor Manufacturing Best Paper Award
- 2016 Outstanding Industry-University Research Award by Ministry of Science and Technology (科技部產學成果優良獎)
- 2016 Junior Research Investigators Award by Academia Sinica (中央研究院年輕學者研究著作獎)
- 2015 Outstanding Young Scholar Award by Ministry of Science and Technology (科技部優秀年輕學者計畫)
- 2015 The K.D. Tocher Medal by The OR Society (歐洲作業研究學會)
- 2015 Ta-You Wu Memorial Award by Ministry of Science and Technology (科技部吳大猷先生紀念獎)
- 2015 IIE Transactions Best Application Paper Award
- 2015 Outstanding Mentor Award by College of Engineering of National Tsing Hua University (清華大學工學院傑出導師獎)
- 2013 Young Faculty Research Award by National Tsing Hua University (清華大學校級新進人員研究獎)
- 2013 Outstanding Young Industrial Engineers Award by Chinese Institute of Industrial Engineers (CIIE)(中國工業工程學會優秀青年工業工程師獎章)
- 2013 Excellent Teaching Award Nomination by National Tsing Hua University (清華大學校傑出教學獎提名)
- 2012 Bonder Scholar Research Award by INFORMS
- 2012 Outstanding Young Scholar Award by National Science Council (國科會優秀年輕學者計畫)
- 2012 Outstanding University-Industry Collaborative Research Award by National Science Council (國科會產學成果傑出獎)
- 2012 Academic Excellence Award by National Tsing Hua University (清華大學學術卓越獎勵)
- 2011 Best Research Poster Award by National Science Council (國科會專題海報優等獎)
- 2010, 2011, 2012, 2013, 2014, 2015, 2016 Excellent Research Project Results by National Science Council (國科會計畫優良成果)
- 2007 Bonder Scholarship in Military Operations Research by INFORMS
- 2007 I-Sim/ACM-SIGSIM OR/MS Best Student Paper Award at 2007 Winter Simulation Conference (USA)

Referred Journal Publications

Published/Accepted

- J1. **Kuo-Hao Chang***, Robert Cuckler, and Chun-Hung Chen, “An Efficient Direct Search Method for Simulation Optimization with Conditional-Expectation-based Objectives,” *IEEE Transactions on Automation Science and Engineering*, accepted.
- J2. **Kuo-Hao Chang***, Robert Cuckler, Song-Lin Lee, and Loo Hay Lee, “Discrete Condition-Expectation-based Simulation Optimization: Methodology and Applications,” *European Journal of Operational Research*, online published.
- J3. **Kuo-Hao Chang***, Chi-Chih Tsai, Chih-Hung Wang, Chung-Jung Chen, and Chih-Ming Lin, “Optimizing the Energy Efficiency of Chiller Systems in the Semiconductor Industry through Big Data Analytics and An Empirical Study,” *Journal of Manufacturing Systems*, 60, 652-661 (2021).
- J4. **Kuo-Hao Chang***, Yi-Jyun Sun, Chi-An Lai, Li-Der Chen, Chih-Hung Wang, Chung-Jung Chen, and Chih-Ming Lin, "Big Data Analytics Energy-Saving Strategies for Air Compressors in the Semiconductor Industry – An Empirical Study," *International Journal of Production Research*, online published (2021).
- J5. **Kuo-Hao Chang***, Hui-Yu Yang, and Robert Cuckler, “An Integrated Response-Surface-based Method for Simulation Optimization with Correlated Outputs,” *Asia-Pacific Journal of Operational Research*, online published (2021).
- J6. **Kuo-Hao Chang*** and Robert Cuckler, “Applying Simulation Optimization for Agile Vehicle Fleet Sizing of Automated Material Handling Systems in Semiconductor Manufacturing,” *Asia-Pacific Journal of Operational Research*, online published (2021).
- J7. Hsiang-Hua Yu, **Kuo-Hao Chang**, Hsin-Wei Hsu*, and Robert Cuckler, “A Monte Carlo simulation-based decision support system for reliability analysis of Taiwan’s power system: Framework and empirical study,” *Energy*, 178, 252-262 (2019).
- J8. **Kuo-Hao Chang*** and Po-Yi Kuo, “An Efficient Simulation Optimization Method for the Generalized Redundancy Allocation Problem,” *European Journal of Operational Research*, 265(3), 1094-1101 (2017).
- J9. Robert Cuckler, **Kuo-Hao Chang***, and Liam Y. Hsieh, “Optimal Parallel Machine Allocation Problem in IC Packaging Using IC-PSO: An Empirical Study,” 34(6), 1750034, *Asia-Pacific Journal of Operational Research* (2017).
- J10. **Kuo-Hao Chang***, “Risk-Controlled Product Mix Planning in Semiconductor Manufacturing Using Simulation Optimization,” *IEEE Transactions on Semiconductor Manufacturing*, 29(4), 411-418 (2016).
- J11. **Kuo-Hao Chang*** and Hou-Kuen Lu, “Quantile-based Simulation Optimization with Inequality Constraints: Methodology and Applications,” *IEEE Transactions on Automation Science and Engineering*, 13(2), 701-708 (2016).

- J12. Ying-Jen Chen, Chu-Yuan Fan, and **Kuo-Hao Chang***, “Manufacturing Intelligence for Reducing False Alarm of Defect Classification by Integrating Similarity Matching Approach in CMOS Image Sensor Manufacturing,” *Computers & Industrial Engineering*, 99, 465-473 (2016).
- J13. **Kuo-Hao Chang***, “A Quantile-based Simulation Optimization Model for Sizing Hybrid Renewable Energy Systems,” *Simulation Modelling Practice and Theory*, 66, 94-103 (2016).
- J14. **Kuo-Hao Chang*** and Liam Y. Hsieh, “Determination of Wafer Start Mix in Semiconductor Manufacturing: Model, Solution Method and an Empirical Study,” *IEEE Transactions on Systems, Man and Cybernetics: Systems*, 46(2), 294-302 (2016).
- J15. Liam Y. Hsieh*, Edward Huang, Si Zhang, Chun-Hung Chen and **Kuo-Hao Chang** “Application of Multi-Fidelity Simulation Modeling to Integrated Circuit Packaging,” *International Journal of Simulation and Process Modeling*, 11(3-4), 259-269 (2016).
- J16. **Kuo-Hao Chang***, “Improving the Efficiency and Efficacy of Stochastic Trust-Region Response-Surface Method for Simulation Optimization,” *IEEE Transactions on Automatic Control*, 60(5), 1235-1243 (2015).
- J17. **Kuo-Hao Chang***, “A Direct Search Method for Unconstrained Quantile-based Simulation Optimization,” *European Journal of Operational Research*, 242(2), 487-495 (2015).
- J18. **Kuo-Hao Chang*** and Grace Lin, “Optimal Design of Hybrid Renewable Energy Systems Using Simulation Optimization,” *Simulation Modelling Practice and Theory*, 52, 40-51 (2015).
- J19. **Kuo-Hao Chang***, “A Decision Support System for Planning and Coordination of Hybrid Renewable Energy Systems,” *Decision Support Systems*, 64, 4-13 (2014).
- J20. **Kuo-Hao Chang***, Ai-Lin Chang and Ching-Yi Kuo, “A Simulation-based Framework for Multi-objective Vehicle Fleet Sizing of Automated Material Handling Systems: An Empirical Study,” *Journal of Simulation*, 8, 271-280 (2014).
- J21. **Kuo-Hao Chang***, Yu-Hsuan Huang, and Shih-Pang Yang, “Vehicle Fleet Sizing for Automated Material Handling Systems to Minimize Cost Subject to Time Constraints,” *IIE Transactions*, 46, 301-312 (2014). (**2015 IIE Transactions Best Paper Award**)
- J22. **Kuo-Hao Chang***, Ming-Kai Li, and Hong Wan, “Combining STRONG and Efficient Screening Designs for Large-Scale Simulation Optimization,” *IIE transactions*, 46, 357-373 (2014).
- J23. Chen-Fu Chien*, **Kuo-Hao Chang**, and Wen-Chih Wang, “An Empirical Study of Design-of-Experiment Data Mining for Yield-Loss Diagnosis in Semiconductor Manufacturing,” *Journal of Intelligent Manufacturing*, 25, 961-972 (2014).

- J24. Ching-Hsiang Chan, Hsiao-Fan Wang*, **Kuo-Hao Chang**, and Ching-Yi Kuo, “An Intelligent Centralized Control System for Dispatching and Routing of the Automatic Guided Vehicles,” *Advances in Computer Science and Engineering*, 12(2), 81-99 (2014).
- J25. Liam Y. Hsieh, **Kuo-Hao Chang***, and Chen-Fu Chien, “Efficient Development of Cycle Time Response Surfaces Using Progressive Simulation Metamodeling,” *International Journal of Production Research*, 52(10), 3097-3109 (2014).
- J26. **Kuo-Hao Chang**, Jeff L. Hong, and Hong Wan*, “Stochastic Trust- Region Response-Surface Method (STRONG)-A New Response Surface Framework for Simulation Optimization,” *INFORMS Journal on Computing*, 25 (2), 230-243 (2013).
- J27. Chen-Fu Chien*, Chia-Yu Hsu, and **Kuo-Hao Chang**, “Overall Wafer Effectiveness (OWE): A Novel Industry Standard for Semiconductor Ecosystem as a Whole,” *Computers and Industrial Engineering*, 65, 117-127 (2013).
- J28. Liam Y. Hsieh and **Kuo-Hao Chang***, “Yield Improvement of In-Mold Decoration Manufacturing through Parameter Optimization,” *International Journal of Precision Engineering and Manufacturing*, 14 (10), 1823-1828 (2013).
- J29. Ying-Jen Chen, Tzu-Hsiang Lin, **Kuo-Hao Chang*** and Chen-Fu Chien, “Feature Extraction for Defect Classification and Yield Enhancement in Color Filter and Micro-lens Manufacturing: An Empirical Study,” *Journal of Industrial and Production Engineering*, 30 (8), 510-517 (2013).
- J30. **Kuo-Hao Chang***, “Stochastic Nelder-Mead Simplex Method-A New Globally Convergent Direct Search Method for Simulation Optimization,” *European Journal of Operational Research*, 220 (3), 684-694 (2012).
- J31. Chao-Jung Huang, **Kuo-Hao Chang***, and James T. Lin, “Optimal Vehicle Allocation for Automated Material Handling System Using Simulation Optimization,” *International Journal of Production Research*, 50, 5734-5746 (2012).
- J32. Chen-Fu Chien*, **Kuo-Hao Chang**, and Chih-Ping Chen, “Design of sampling strategy for measuring and compensating overlay errors in semiconductor manufacturing,” *International Journal of Production Research*, 41 (11), 2547-2561 (2003).
- J33. Chen-Fu Chien*, **Kuo-Hao Chang**, and Chih-Ping Chen, “Modeling Overlay Errors and Sampling Strategies to Improve Yield”, *Journal of the Chinese Institute of Industrial Engineers*, 18 (3), 95-103 (2001).

Under revision/Submitted

- J34. **Kuo-Hao Chang***, Robert Cuckler, and Chun-Hung Chen, “An Efficient Direct Search Method for Simulation Optimization with Conditional-Expectation-based Objectives,” *IEEE Transactions on Automation Science and Engineering*, minor revision (2021).
- J35. **Kuo-Hao Chang***, Robert Cuckler, Song-Lin Lee, and Loo Hay Lee, “Discrete Conditional-Expectation-based Simulation Optimization: Methodology and Applications,” *European Journal of Operational Research*, under review (2021).

- J36. **Kuo-Hao Chang***, Chi-Chih Tsai, Chih-Hung Wang, Chung-Jung Chen, and Chih-Ming Lin, “Optimizing the Energy Efficiency of Chiller Systems in the Semiconductor Industry through Big Data Analytics and An Empirical Study,” *Journal of Manufacturing Systems*, under review (2021).

International Conference

- C1. Yi-Ting Lee, **Kuo-Hao Chang***, Tzu-Li Chen and Tzu-Yin Chang, “Two Stages Stochastic Optimization Of Ambulance Dispatch With Mass Casualty Incident Under Road Vulnerability”, 2021 ORSTW, Taichung, Taiwan
- C2. Chieh-Hsin Chang, **Kuo-Hao Chang*** and Jih-Bing Sheu, “Construction of Post-Disaster Road Network Model and Connectivity Analysis”, 2021 ORSTW, Taichung, Taiwan
- C3. Fu-Hao Yang, **Kuo-Hao Chang***, Tzu-Li Chen, Tzu-Yin Chang, Chy-Chang Chang and Chih-Hao Liu, “Simulation Optimization for Stochastic Casualty Collection Point Location and Resource Allocation Problem in a Mass Casualty Incident”, 2021 ORSTW, Taichung, Taiwan
- C4. Guan-Xun Wang, **Kuo-Hao Chang*** and Jih-Bing Sheu, "Medical Resource Preemptive Allocation", 2021 ORSTW, Taichung, Taiwan
- C5. Yi-Ting Lee, **Kuo-Hao Chang***, Tzu-Li Chen, Tzu-Yin Chang, Chy-Chang Chang and Chih-Hao Liu, “Two Stages Stochastic Optimization of Ambulance Dispatch with Mass Casualty Incident under Road Vulnerability”, 2021 CIIE, Tainan, Taiwan
- C6. Fu-Hao Yang, **Kuo-Hao Chang***, Tzu-Li Chen, Tzu-Yin Chang, Chy-Chang Chang and Chih-Hao Liu, “Simulation Optimization for Stochastic Casualty Collection Point Location and Resource Allocation Problem in a Mass Casualty Incident”, 2021 CIIE, Tainan, Taiwan
- C7. Ying-Zheng Wu and **Kuo-Hao Chang***, “Construction of Post-disaster Dynamic Pedestrian Evacuation Simulation Model for Large-scale Earthquake– The Case of Taipei City”, 2020 ORSTW, Hsinchu, Taiwan
- C8. Tzu-Yi Hsiung and **Kuo-Hao Chang***, “Multi Commodity Distribution under Uncertainty in Disaster Response Phase”, 2020 ORSTW, Hsinchu, Taiwan
- C9. Cheng-Chieh Huang and **Kuo-Hao Chang***, “Solving Buffer Allocation Problem and Machine Selection Problem via Simulation Optimization”, 2020 ORSTW, Hsinchu, Taiwan
- C10. **Kuo-Hao Chang***, Hsing-Yu Lin, “An Efficient Framework for Conditional-Expectation-based Simulation Optimization,” 2019 INFORMS, Seattle, USA
- C11. Chi-Chih Tsai, **Kuo-Hao Chang***, Chi-Che Tai, Chih-Hung Huang, Chung-Jung Chen and Chih-Ming Lin, “A Study of Chiller System Operation Optimization and Energy Saving,” 2019 APIEMS, Kanazawa, Japan

- C12. Chia-Hsin Pan, **Kuo-Hao Chang***, Chi-Che Tai, Chih-Hung Huang, Chung-Jung Chen and Chih-Ming Lin, “Prediction Model of Chiller Water System and an Empirical Study,” 2019 APIEMS, Kanazawa, Japan
- C13. Wei-Ya Wang and **Kuo-Hao Chang***, “Machine Selection Problem in Required Capacity Condition via Simulation Optimization,” 2019 APIEMS, Kanazawa, Japan
- C14. Yi-Jyun Sun, Chi-An Lai, **Kuo-Hao Chang***, Li-Der Chen, Chih-Hung Wang, Chung-Jung Chen and Chih-Ming Lin, “Finding an Optimal Configuration for Air Compressors – A Case Study of a Taiwan Semiconductor Company,” 2019 APIEMS, Kanazawa, Japan
- C15. Song-Lin Lee and Kuo-Hao Chang*, “An Efficient Algorithm for Discrete Conditional Expectation-Based Optimization via Simulation,” 2019 APIEMS, Kanazawa, Japan
- C16. Hsiang-Hua Yu and **Kuo-Hao Chang***, “Reliability Analysis of National Power System in Consideration of Different Energy Allocation,” 2018 ICAMS, Milano, Italy
- C17. Wei-Li Liu and **Kuo-Hao Chang***, “A STRONG-based Framework for Quantile-based Simulation Optimization with Efficient Simulation Experiments,” 2018 ICAMS, Milano, Italy
- C18. Hui-Yu Yang and **Kuo-Hao Chang***, “A Response-Surface-based Algorithm for Simulation Optimization with Correlated Outputs,” 2018 ICAMS, Milano, Italy
- C19. Hsing-Yu Lin and **Kuo-Hao Chang***, “An Optimization Framework for Conditional-Expectation-based Simulation Optimization,” 2018 ICAMS, Milano, Italy
- C20. En-Ping Chen and **Kuo-Hao Chang***, “A New Particle-Swarm-Based Simulation Optimization Method for Generalized Redundancy Allocation Problem,” 2017 ICAMS, Barcelona, Spain
- C21. Chi-Ping Lin and **Kuo-Hao Chang***, “Solving Minimum Cost Redundancy Allocation Problem Using Simulation Optimization,” 2017 ICAMS, Barcelona, Spain
- C22. Yuan-Yuan Liu and **Kuo-Hao Chang***, “An Adaptive Pattern Search Algorithm for Optimization Problems with CVaR Constraints,” 2017 ICAMS, Barcelona, Spain
- C23. Ying-Hsuan Lu, **Kuo-Hao Chang***, and Liam Y. Hsieh, “Large-Scale Quantile-based Simulation Optimization Using Efficient Factor Screening,” 2017 ICAMS, Barcelona, Spain
- C24. You-Ying Chen and **Kuo-Hao Chang***, “Optimal Condition-Based Maintenance and Inventory Policy in A Continuously Monitoring System using Simulation Optimization,” 2017 ICAMS, Barcelona, Spain
- C25. Wenyu Wang, Hong Wan* and **Kuo-Hao Chang**, “Randomized block coordinate descendant STRONG for large-scale Stochastic Optimization,” *Proceedings of 2016 Winter Simulation Conference* 2016, 614-625

- C26. **Kuo-Hao Chang*** and Po-Yi Kuo, “An Efficient Simulation Optimization Method for Generalized Redundancy Allocation Problem,” 2016 ISMI, Hsinchu, Taiwan
- C27. **Kuo-Hao Chang***, “An Efficient Method for Probability-based Simulation Optimization,” 2016 INFORMS International, Hawaii, USA
- C28. **Kuo-Hao Chang***, “Solving Product Mix Problem in Production Ramp-up in Semiconductor Industry Using Quantile-based Simulation Optimization,” 2016 INFORMS International, Hawaii, USA
- C29. Po-Yi Kuo and **Kuo-Hao Chang***, “Solving the Reliability Redundancy Allocation Problem Using Simulation Optimization,” 2015 APIEMS, Ho Chi Minh City, Vietnam
- C30. Peng-Chi Chen and **Kuo-Hao Chang***, “Response-Surface-based Framework for Efficient Cycle Time Prediction and Parameter Optimization for Complex Manufacturing,” 2015 APIEMS, Ho Chi Minh City, Vietnam
- C31. Tsung-Hsi Tsai and **Kuo-Hao Chang***, “Automatic and Intelligent Control of Environmental Factors for Smart Space,” 2015 APIEMS, Ho Chi Minh City, Vietnam
- C32. Wan-Ting Kao and **Kuo-Hao Chang***, “Optimal Parallel Machine Allocation in Integrated Circuit Assembly”, 2015 APIEMS, Ho Chi Minh City, Vietnam
- C33. **Kuo-Hao Chang***, “An Activity-Driven Optimization Model for Smart Space,” 2015 INFORMS annual meeting, Philadelphia, USA
- C34. **Kuo-Hao Chang***, “Vehicle fleet sizing to minimize cost subject to time constraints,” 2015 IIE annual conference, Nashville, USA
- C35. **Kuo-Hao Chang*** and Hou-Kuen Lu, “Solving quantile-based stochastic optimization problems with modified Stochastic Nelder-Mead Simplex Method,” 2014 IEEE 18th International Conference on Computer Supported Cooperative Work in Design (CSCWD), Hsinchu, Taiwan
- C36. **Kuo-Hao Chang***, “Optimal Power Storage Strategy of Hybrid Renewable Energy Systems in Uncertain Environments,” 2014 INFORMS annual meeting, San Francisco, USA.
- C37. Chu-Yuan Fan, **Kuo-Hao Chang***, Chen-Fu Chien and Ying-Jen, “A Similarity Ranking Approach to Reduce False Alarm of Defect Classification in CMOS Image Sensor Manufacturing,” 2014 APIEMS, Jeju island, Korea
- C38. Liam Y. Hsieh and **Kuo-Hao Chang***, “Determining the Optimal Wafer Start Rate in Semiconductor Manufacturing during New Technology Ramp-up,” 2014 APIEMS, Jeju island, Korea
- C39. Yan-Han Lu and **Kuo-Hao Chang***, “Stochastic Global Optimization Using Sequential Kriging Metamodeling,” 2014 APIEMS, Jeju island, Korea
- C40. Chi-Kang Su and **Kuo-Hao Chang***, “Modeling and Optimization of Power Storage Strategy of Hybrid Renewable Energy System in Uncertain Environments,” 2014 APIEMS,

Jeju island, Korea

- C41. Mao-Kai Hsu and **Kuo-Hao Chang***, “Campaign Planning for Multi-purpose Batch Plants: A Case Study from Pharmaceutical Industry,” 2014 APIEMS, Jeju island, Korea
- C42. **Kuo-Hao Chang***, “Quantile Optimization via SNM,” 2014 IFORS, Barcelona, Spain
- C43. Kataoka Hirohiko and **Kuo-Hao Chang***, “Optimal Sampling Strategy of Incoming Quality Control in In-Mold Decoration Manufacturing,” 2014 IEOM, Bali, Indonesia
- C44. Yi-Ling Tsai and **Kuo-Hao Chang***, “Robust Power Supply Model for Hybrid Renewable Energy System with Uncertain Parameters,” 2014 IEOM, Bali, Indonesia
- C45. Hou-Kuen Lu and **Kuo-Hao Chang***, “Quantile-Based Stochastic Optimization Using Modified Stochastic Nelder-Mead Simplex Method,” 2014 IEOM, Bali, Indonesia
- C46. Chi-An Rong and **Kuo-Hao Chang***, “Optimal Sampling Policy in Semiconductor Manufacturing and an Empirical Study,” 2014 IEOM, Bali, Indonesia
- C47. Ying-Jen Chen, Tzu-Hsiang Lin, **Kuo-Hao Chang***, Chen-Fu Chien, Ben Fun, GB Huang, River Hung, “Automatic Defect Detection and Classification for Color Filter and Micro-lens Manufacturing,” 2013 e-Manufacturing and Design Collaboration Symposium 2013-A Joint Symposium with ISSM 2013
- C48. **Kuo-Hao Chang***, “Planning and Coordination of Scattered Hybrid Renewable Energy Systems,” 2013 INFORMS annual meeting, Minneapolis, USA
- C49. Liam Y. Hsieh, **Kuo-Hao Chang*** and Chen-Fu Chien, “Determining Optimal Hot Lot Percentage in Semiconductor Manufacturing,” *Proceedings of the 2013 International Conference on Intelligent Manufacturing and Logistics Systems*.
- C50. **Kuo-Hao Chang***, “Solving Large-Scale Random Linear Programs via Sequential Statistical Approximation,” 2012 INFORMS annual meeting, Phoenix, USA
- C51. Ai-Lin Chang and **Kuo-Hao Chang***, “Simulation-based Data Envelopment Analysis Approach for Multi-objective Vehicle Fleet Sizing,” *Proceedings of 2012 Asia Pacific Industrial Engineering and Management Society*.
- C52. Shih-Pang Yang and **Kuo-Hao Chang***, “Improving the Efficiency of STRONG with Optimal Designs in the Presence of Model Misspecifications,” *Proceedings of 2012 Asia Pacific Industrial Engineering and Management Society*.
- C53. Heng-Chen Chiang and **Kuo-Hao Chang***, “Human Resource Allocation in Production Lines,” *Proceedings of 2012 Asia Pacific Industrial Engineering and Management Society*.
- C54. Yen-Chu Chen and **Kuo-Hao Chang***, “Modeling and Optimization of the Management of Renewable Energy System in Uncertain Environment,” *Proceedings of 2012 Asia Pacific Industrial Engineering and Management Society*.

- C55. Hui-Hsin Cheng and **Kuo-Hao Chang***, “Enhancing Energy Transmission Efficiency of Hybrid Renewable Energy in Smart Grid,” *Proceedings of 2012 Asia Pacific Industrial Engineering and Management Society*.
- C56. Tzu-Hsiang Lin and **Kuo-Hao Chang***, “Simulation Metamodeling Using Sequential Bisectioning Interpolation Technique: Theory and Application,” *Proceedings of 2012 Asia Pacific Industrial Engineering and Management Society*.
- C57. Chia-Yu Chang, **Kuo-Hao Chang***, “An Integrated and Improved Dispatching Approach to Reduce Cycle Time of Wet Etch and Furnace Operations in Semiconductor Fabrication,” *Proceedings of 2012 16th IEEE International Conference on Computer Supported Cooperative Work in Design*, 735-741 **[EI]**.
- C58. Li-Yuan Yen, **Kuo-Hao Chang***, “Cycle Time Reduction for Photolithography Area with Multi-Workstation,” To appear in *Proceedings of 2012 16th IEEE International Conference on Computer Supported Cooperative Work in Design*, 742-746 **[EI]**.
- C59. **Kuo-Hao Chang***, Ming-Kai Li and Hong Wan, “Combining STRONG and Screening Designs for Large-Scale Simulation Optimization,” *Proceedings of the 2011 Winter Simulation Conference* (invited paper) 4127-4136. **[EI]**
- C60. Chen-Fu Chien, Hung-Ya Huang, **Kuo-Hao Chang**, Yu-Cheng Lin, and Tien-Hsian Liu (2011, September) “Semiconductor Manufacturing Intelligence and Key Factor Control Mechanism for Managing Production Cycle Time,” *Proceedings of 2011 International Symposium on Semiconductor Manufacturing*, September 5-6, Hsinchu, Taiwan.
- C61. James T. Lin, **Kuo-Hao Chang***, and Chao-Jung Huang, “Dynamic Vehicle Allocation in Automated Material Handling System,” *Proceedings of the 2010 IEEE 17th International Conference on Industrial Engineering and Engineering Management*, 1523-1527. **[EI]**
- C62. **Kuo-Hao Chang**, and Hong Wan*, “Stochastic Trust Region Response Surface Convergent Method –An Extension for Generally-Distributed Response Surface,” *Proceedings of the 2009 Winter Simulation Conference 2009*, 563-573. **[EI]**
- C63. **Kuo-Hao Chang**, Jeff L. Hong, and Hong Wan*, “Stochastic Trust Region Gradient-Free Method (STRONG)-A New Response Surface-Based Algorithm in Simulation Optimization” *Proceedings of 2007 Winter Simulation Conference 2007*, 346-354, 2007. **[EI](I-Sim/ACM-SIGSIM Best Student Paper Award)**
- C64. Chen-Fu Chien*, **Kuo-Hao Chang**, Chih-Ping Chen, “Sampling Strategy and Model to Measure and Compensate the Overlay Errors,” *Proceedings of SPIE*, 4344, 245-256, 2001.

Research Grant

- R1. “Simulation and Optimization of for Efficient and Effective Post-Earthquake Medical Rescue Process (建立震災醫療救難之模擬系統以及最佳化決策)” (PI), 1,000,000, Ministry of Science and Technology (科技部), 2021/8/1-2022/7/31

- R2. “An Optimization Framework for Simulation Optimization with Correlated Outputs (隨機系統輸出具相關性時的最佳化架構: 理論與應用)” (PI), 3,206,000, Ministry of Science and Technology (科技部)2020/8/1-2023/7/31
- R3. “Building Intelligent Chiller Systems Using Big Data Analytics (以大數據分析建構智能冰機節能策略與導入之研究)” (PI), NTD 1,800,000, UMC (聯華電子股份有限公司), 2019/1/1-2019/12/31
- R4. “Building Preventive Maintenance and Machine Allocation Models for Air Compressors Using Big Data Techniques (利用大數據建構空壓機預防性保養以及機台調度模式)” (PI), NTD 904,412, UMC (聯華電子股份有限公司), 2019/1/1-2019/8/31
- R5. “Convergent Frameworks for Conditional-Expectation-based Simulation Optimization: Theory and Applications (條件期望值模擬最佳化之收斂演算架構: 理論與應用)” (PI), NTD 3,332,792, Ministry of Science and Technology (科技部), MOST 107-2628-E-007-003-MY3, 2018/8/1-2021/7/31
- R6. “Big Data Analysis in Biomedical Industry (生物晶片實驗數據之統計分析)” (PI), NTD115,000, Heliosbioelectronics Corporation (瀚源生醫股份有限公司), 2017/9/1-2018/2/28
- R7. “Yield Improving and Operations Management through Big Data in Manufacturing Barcode Systems (以製造條碼系統之大數據來進行良率改善與營銷管理)” (PI), NTD1,434,000, Hocheng Corporation (和成欣業股份有限公司), 2017/11/1-2018/10/31
- R8. “Reliability analysis of national power system in consideration of different energy allocation (考量不同能源配比下我國電力系統可靠度分析)” (PI), NTD480,000, Industrial Technology Research Institute (工研院), 2017/1/1-2017/11/30
- R9. “Probability-based Simulation Optimization: Theory and Applications (機率模擬最佳化: 理論與應用)” (PI), Ta-You Wu Memorial Award Project (吳大猷先生紀念獎計畫), NTD2,190,000, Ministry of Science and Technology (科技部), MOST105-2221-E-007-112-MY3, 2016/8/1-2019/7/31
- R10. “Capacity dynamic modeling and prediction – quantile-based cycle time modeling and parameters optimization (產能動態建模與預測技術-製程分量生產週期建模與參數組合最佳化)” (PI), NTD600,000, Institute for Information Industry (資策會), 2016/4/1-2016/12/15
- R11. “IC STEP Consortium: Big Data Analytics, Resource Management Optimization, and Smart Production Technologies” (Co-PI) Ministry of Science and Technology (科技部 深耕工業基礎技術專案計畫), NTD6,000,000, 2016/10/1-2020/9/30.
- R12. “Yield Improvement Research for Plastic Injection Molding (塑膠良率改善)” (PI), NTD808,048 (技術移轉金 NTD105,398), Liteon Technology (光寶科技), 2015/8/1-2016/3/31

- R13. “Quantile-based Simulation Optimization: Theory and Applications (分量模擬最佳化：理論與應用)” (PI), NTD2,903,000, Ministry of Science and Technology (科技部), MOST 104-2628-E-007-004-MY3, 2015/8/1-2018/7/31
- R14. “Modeling and Analysis of Hybrid Renewable Energy Systems: A New Risk Management Framework (混合式再生能源系統最佳建置及績效分析：一個新的風險管理架構)” (PI), NTD2,156,000, Ministry of Science and Technology (科技部), MOST 104-2221-E-007-057-MY3, 2015/8/1-2018/7/31
- R15. “Behavior awareness technique optimization and fault tolerance analysis (行為感知技術優化與容錯評估分析)” (PI), NTD800,000, Institute for Information Industry (資策會), 2015/4/1-2015/12/20
- R16. “Predictive modeling on equipment, product, and materials (機台/產品/材料預測建模技術)” (PI), NTD600,000, Institute for Information Industry (資策會), 2015/04/01-2015/12/20
- R17. “Campaign Planning for Pharmaceutical Industry (製藥業系統模擬與最佳化生產排程)” (PI), NTD450,000 (技術移轉金 NTD77,940), GiantSoft company (嘉禾軟體) and ScinoPharm Taiwan (台灣神隆), Ltd. 2014/10/1-2015/6/30
- R18. “Semiconductor Technologies Empowerment Partners Consortium: Big Data Analytics and Optimization Technologies” (Co-PI) Ministry of Science and Technology and Global Unichip Corp. (科技部深耕工業基礎技術專案計畫), 2014/11/1-2015/10/30
- R19. “Statistical Modeling and Robust Optimization for Two-Shot Plastic Molding Manufacturing (塑膠二次加工製程之統計模式與穩健最佳化)” (PI), NTD704,840 (先期技轉金 NTD55,140), Ministry of Science and Technology and YOMURA company (科技部與員全股份有限公司), MOST103-2622-E-007-027-CC3, 2014/11/1-2015/10/31.
- R20. “Yield Improvement for Two Shot Injection Molding Machines Using Response Surface Methodology (以反應曲面法進行雙色射出成型機台良率改善)” (PI), NTD736,000 (先期技轉金 NTD62,000) Ministry of Science and Technology and YOMURA company (科技部與員全股份有限公司), MOST 102-2622-E-007-028-CC3, 2013/11/1-2014/10/31. (University-Industry Collaborative Research Project)
- R21. “Applying Big Data Techniques to Match Renewable Supply and Power Demand in Uncertain Environments (巨量資料於產業應用研究：智慧電網供需媒合與最佳化技術)” (PI), NTD600,000, Institute for Information Industry (資策會), 2014/4/1-2014/12/20.
- R22. “Risk Analysis and Decision Support System for Supply-Demand Energy Balance Model (智慧電網隨機供需平衡模型風險評估與決策支援)” (PI), NTD500,000, Institute for Information Industry (資策會), 2013/4/1-2013/12/20.

- R23. “Research on Enhancing the Usability of Equipment of Automated Optical Inspection” (Co-PI), VisEra company (采鈺科技), 2013/7/1-2013/10/31. (University-Industry Collaborative Research Project)
- R24. “Multi-Objective Simulation Optimization Techniques for Vehicle Fleet Routing (無人搬運車運送任務多目標規劃技術)” (PI), NTD500,000, Industrial Technology Research Institute (工研院), 2013/3/01-2013/11/30.
- R25. “Yield Improvement by Developing Effective Sampling Schemes in IMD Manufacturing (研發模內裝飾技術製程抽樣計畫以達成良率改善)” (PI), NTD143,000, YOMURA company (員全股份有限公司), 2012/10/1-2013/9/30.
- R26. “Dynamic Human Resource Allocation among Multiple Production Lines with Learning Curve Consideration (考慮學習曲線下多重產品生產線之動態人力資源配置)” (PI), NTD671,160(先期技轉金 NTD50,000), Ministry of Science and Technology and YOMURA Company (科技部與員全股份有限公司), NSC101-2622-E-007-018-CC3, 2012/10/1-2013/9/30. (University-Industry Collaborative Research Project)
- R27. “Solving Large-Scale Random Linear Programs via Sequential Statistical Approximation: Theory and Applications (序列式統計漸進法求解大型隨機線性規劃：理論與應用)” (PI), NTD2,395,000, Ministry of Science and Technology (科技部), MOST 101-2628-E-007-010-MY3, 2012/8/1-2015/7/31.
- R28. “Defect Decision Analysis and Decision Support (自動光學檢測設備參數模式化以提升機台使用率之研究)” (PI), NTD1,220,000, VisEra company (采鈺科技), 2012/5/1-2013/4/30.
- R29. “Modeling and Optimization of Hybrid Renewable Energy System (智慧型混合可再生能源電網模型)” (PI), NTD500,000, Institute for Information Industry (資策會), 2012/4-2012/12.
- R30. “Optimization Techniques for Designing Automated Material Handling System with Desired Performance (自動化運載系統群組機器人派工協調技術研究)” (PI), NTD600,000, Industrial Technology Research Institute (工研院), 2012/3/01-2012/11/30.
- R31. “A Decision Support System to Facilitate Green Technology R&D and Green Supply Chain Operations-Project 4” (PI), NTD1,800,000, Ministry of Education, 2011/8/01-2017/12/31.
- R32. “Research on yield improvement and parameter optimization for IMD manufacturing (模內裝飾技術(IMD)生產之良率改善與製程因子最佳化)” (PI), NTD480,000, Ministry of Science and Technology and YOMURA Company (科技部與員全股份有限公司), NSC100-2622-E-007-012-CC3, 2011/6/01-2012/05/31.
- R33. “Feasibility Study on Information System of LED Industry Cycle Time,” (Co-PI), VisEra Company (采鈺科技), 2011/10/1-2011/12/31.

- R34. “Simulation Optimization Frameworks and Optimal Simulation Designs for Large-Scale Stochastic Systems with Generally-Distributed Response Surface (非常態之大型隨機系統模擬最佳化演算法與最佳模擬實驗設計)” (**PI**), NTD1,206,000, Ministry of Science and Technology (科技部), NSC 99-2221-E-007-038-MY2, 2010/8/01-2012/7/31.
- R35. “Simulation-based Optimization Algorithmic Frameworks for Large-Scale Stochastic Systems (大型隨機系統模擬最佳化演算法之研究)” (**PI**), NTD638,000, Ministry of Science and Technology (科技部), NSC98-2218-E-007-015, 2009/10/1-2010/12/31.
- R36. “Optimization and Analysis of the Decision Models for Product Sampling” (**Co-PI**), Taiwan Semiconductor Manufacturing Company (台積電), 2011.1-2011.8.
- R37. “Production Management Decision Model with Optimized Information Value” (**Co-PI**), Taiwan Semiconductor Manufacturing Company (台積電), 2010/10/01-2011/3/31. (University-Industry Collaborative Research Project)
- R38. “Construct and Promote Cost-based Integrated Operation Decision Analysis Model and Decision Support System for Small and Medium IC Design Companies” (**Co-PI**), Ministry of Economic Affairs, 2009/10/01-2010/5/31

Invited Talk

- I1. “Stochastic Modelling Techniques for Disaster Reduction and Mitigation,” National Center of Science and Technology for Disaster Reduction, January, 2021
- I2. “Big Data Analytics Applied in Disaster Reduction: Technology and Applications,” October 2020, National Taiwan University of Science and Technology
- I3. “Introduction to Industry 4.0,” National Chiao Tung University, Hsinchu, January, 2019
- I4. “Introduction to Big Data Analytics,” National Chiao Tung University, Hsinchu, January, 2019
- I5. “Applications of Design of Experiments Techniques,” National Chiao Tung University, March, 2018
- I6. “大數據實驗設計與反應曲面法分析,” Industrial Technology Research Institute (工研院), July, 2018
- I7. “An Efficient Simulation Optimization Method for Generalized Redundancy Allocation Problem,” Providence University, Taichung, October, 2017
- I8. “From Data Mining to Data Farming: Better Data, not just Big Data,” National Taiwan University, December, 2016
- I9. “Statistical Thinking in an Uncertain World,” National Chiao Tung University, Hsinchu, May, 2016
- I10. “Stochastic Optimization: New Advances for Real World Applications,” National

- Taiwan University of Science and Technology, Taipei, April, 2016
- I11. “Improving Yield through Response Surface Methodology,” Lite-on Technology Ltd., Guangzhou, March, 2016
 - I12. “Addressing Uncertainty in Real World,” National Chiao Tung University, Hsinchu, March, 2016
 - I13. “Statistical Thinking in Stochastic Optimization,” Providence University, Taichung, December, 2015
 - I14. “Simulation Optimization: Methods and Applications,” National Taiwan University, Taipei, December, 2015
 - I15. “Statistical Thinking in Stochastic Optimization,” National Chin-Yi University of Technology, Taichung, December, 2015
 - I16. “Simulation Optimization: Methods and Applications,” National Taiwan University of Science and Technology, Taipei, December, 2015
 - I17. “Response Surface Methodology in Industry,” 2015 The 6th workshop on quality management, Providence University, May 2015
 - I18. “Simulation in Industry,” The Hong Kong University Science and Technology, Hong Kong, August 2013
 - I19. “Industrial Applications on Service Science,” National Taiwan University Science and Technology, Taipei, May 2013.
 - I20. “Dealing with Uncertain World Using Simulation,” Chung Yuan Christian University, Chung-Li, May 2013.
 - I21. “New Advancements of Simulation Optimization: Theory and Applications,” 1st Cross-Straits Optimization Workshop, Taipei, March 2013.
 - I22. “Vehicle Fleet Sizing Using Simulation Optimization,” National Taiwan University Science and Technology, Taipei, November 2012.
 - I23. “Modeling and Optimization of Power Management in Uncertain World,” Yuan Ze University, Chung Li, November 2012.
 - I24. “Making Best Decisions under Uncertainty,” National Dong Hwa University, Hualien, November 2011.
 - I25. “Improving Decision Quality under Uncertainty,” Cheng Shiu University, November 2011.
 - I26. “A Brief Introduction to Simulation Optimization,” National Tsing Hua University, Hsinchu, June 2011.
 - I27. “Simulation Optimization Using Stochastic Trust-Region Response-Surface Method,” National Tsing Hua University, Hsinchu, September 2009.

Patents

- 張國浩, 簡禎富, 陳暎仁 “整合影像非類與資料挖礦之自動光學檢測缺陷影像分類方法” 中華民國專利證書發明第 I525317 號
- **Kuo-Hao Chang**, Ying-Jen Chen and Chen-Fu Chien, “Method of Defect Image Classification through Integrating Image Analysis and Data Mining” (2013), USA 9,082,009B2
- Chen-Fu Chien, **Kuo-Hao Chang**, Chih-Ping Chen, “Overlay Error Model, Sampling Strategy and Associated Equipment for Implementation” (2000), USA Invention Patent (US6975974).

Professional Membership/Service

- Board Member, Asia Pacific Industrial Engineering and Management Society
- Chair, Poster session, 2018 INFORMS International Meeting
- Member representative, Chinese Institute of Industrial Engineers (CIIE) (中國工業工程學會北區會員代表), 2016/8-present
- Board Member, Operations Research Society of Taiwan(台灣作業研究學會理事), 2013/12-present
- Committee Member, International Activity Committee, INFORMS (2012-present)
- Member, INFORMS (2007-present)
- Member, Chinese Institute of Industrial Engineers (2010-present)
- Member, Alpha Pi Mu: Industrial Engineering Honor Society
- Conference organizer/ program committee
 - 2016 APIEMS*
 - 2016 ISMI*
 - 2016 QR2MSE & WCEAM2016*
 - 2014 IEEE 18th International CSCWD*
 - 2010-2017 Workshop on Operations Research/ Supply Chain Management*
 - 2009 Winter Simulation Conference*
 - 2008 Winter Simulation Conference*
- Reviewer for journals
 - Naval Research Logistics*
 - ACM Transactions on Modeling and Computer Simulation*
 - IEEE Transactions on Automation Science and Engineering*
 - IEEE Transactions on Automatic Control*
 - IEEE Transactions on Industrial Electronics*
 - IEEE Transactions on Semiconductor Manufacturing*
 - IEEE Transactions on Systems, Man and Cybernetics: Systems*
 - European Journal of Operational Research*
 - Decision Support Systems*
 - Simulation Modeling Practice and Theory*
 - Journal of Simulation*
 - International Journal of Production Research*
 - Asia-Pacific Journal of Operational Research*
 - Computers & Industrial Engineering*

Abstract and Applied Analysis
Applied Stochastic Models in Business and Industry
The International Journal of Advanced Manufacturing Technology
International Journal of Precision Engineering and Manufacturing
Quality Technology and Quantitative Management
Journal of Industrial and Production Engineering
International Journal of Operations Research
Journal of Management & Systems
Engineering Optimization
Fuzzy Optimization and Decision Making

Department/University Service

University

- Division Director of General Affairs, Office of Global Affairs of NTHU (全球處綜合事務組組長) 2016/2-present

Department

- IEEM Alumni Committee (系友事務委員會委員) 2009/8-present
- IEEM Staff Hiring Committee (職聘小組委員會委員) 2009/8-2010/7
- IEEM High School Promoting Representative (高中宣傳委員) 2009/8-2015/7
- IEEM Library Committee (圖書館委員會委員) 2010/8-2011/7
- IEEM International Student Affair Committee (國際學生事務委員會委員) 2012/8 –present
- IEEM IEET Accreditation Committee (IEET 認證工作委員會委員) 2012/8-2013/7
- IEEM Undergraduate Student Caring Committee (系大學部關懷教師) 2012/8-2015/7
- IEEM Ph.D. Admission Committee (博士班入學審查委員) 2010/10-present
- IEEM M.S. Admission Committee (碩士班入學審查委員) 2010/10-present
- IEEM Admission Committee (招生委員會) 2016/8-present
- IEEM Advisor Workshop committee (導師工作委員會) 2015/8-present
- Organizing Committee, 2010-2014 Operations Research and Supply Chain Management Workshop 2010-2014
- Organizing Committee, 2014 IEEE 18th International Conference on CSCWD
- Advisor, NTHU and HKUST undergraduate senior project collaboration 2010/9

Courses Taught

At National Tsing Hua University

GOM 550400 Quantitative Methods in Management
IEEM 516000 Advanced Operations Research
EMIM 500200 Big Data and Decision Analysis
IEEM 301000 Operations Research (I)
IEEM 302000 Operations Research (II)
IEEM 510400 Stochastic Optimization
IEEM 514100 Simulation Analysis

IEEM 510300 Stochastic Processes

IEEM 517000 Operations Research Applications

IEEM 510500 Statistical Methods

IEEM 531100 System Simulation

IEEM 710300 Special Issues on Operations Research

At West Virginia University

IENG 314 Advanced Analysis of Engineering Data

IENG 455 Simulation by Digital Methods

IENG 756 Applied Stochastic Processes

At Purdue University

MA162 Plane Analytic Geometry and Calculus II