

CURRICULUM VITAE

Wheyming Tina Song

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Education

1988 Ph.D. School of Industrial Engineering
Purdue University, IN 47907
1984 M.S.IE Department of Industrial Engineering
The University of Pittsburgh, Pittsburgh, PA 15213
1983 M.A Department of Mathematics and Statistics
The University of Pittsburgh, Pittsburgh, PA 15213
1981 M.B.A Department of Industrial Management (Major: Marketing Analysis)
National Cheng-Kung University, Taiwan, R.O.C.
1979 B.S Department of Statistics
National Cheng-Kung University, Taiwan, R.O.C.

Professional Experience

2/2023-now	Chair Professor	Dept. of Information Eng. and Computer Science Feng Chia Univ., Taichung, Taiwan, R.O.C.
8/2018-2023	Distinguished Professor	Dept. of Industrial Eng. and Eng. Management National Tsing Hua University, Taiwan, R.O.C.
8/95-8/2018	Professor	Dept. of Industrial Engineering National Tsing Hua Univ., Taiwan, R.O.C.
2/90-8/95	Associate Professor	Dept. of Industrial Engineering National Tsing Hua Univ., Taiwan, R.O.C.
1/08-8/05	Visiting Professor	Medical School, UC Davis, USA
1/05-8/05	Visiting Professor	School of Industrial Engineering, Purdue Univ., USA
7/01-2/02	Visiting Professor	Department of Electrical Engineering and Computer Science, U.C. Berkeley
9/96-8/97	Visiting Professor	Department of Industrial Engineering and Management Science Northwestern Univ., U.S.A.

- 1990 IIE Doctoral Dissertation Award (the second-place recipient), International Industrial Engineering Conference, San Francisco, California 1990. Thesis Title: Estimators of the Variance of the Sample Mean: Quadratic Forms, Optimal Batch Sizes, and Linear Combinations.
- 1988 Omega Rho Student Paper Award (one of four national winners), TIMS/ORSA Joint National Meeting, Washington, DC, April 1988. Paper Title: “On the Dispersion Matrix of Variance Estimators of the Sample Mean in the Analysis of Simulation Output.”
- 1986, 1987, 1988 David Ross Fellowship, Purdue Research Foundation.

Over a Hundred Science Popularization Lectures

- Dedicated to promoting the educational philosophy of systems thinking and fostering wisdom
- Conducted over 30 sessions for junior high and elementary school students, with a special emphasis on promoting energy conservation in rural elementary schools since 2022. The approach involves disseminating the message through song, earning praise from numerous elementary school principals.
- Delivered over 40 sessions at higher education institutions, including a keynote address on industry trends at Feng Chia University on March 28, 2021, attended by an audience of 400.
- Conducted over 40 sessions in the corporate sector, with an audience of over 4,000 executives, including those from companies such as Zhonghao Chimei, GlobalWafers, UMC, Macronix, Quanta, Aerospace Industrial Development Corporation, and HTC. Attendees provided feedback such as “Substantive, logical, flavorful, and with a touch of happiness” and “Rich in examples, captivating, leaving one wanting more”.
- In 2020, during the National Chiao Tung University vacation period, I dedicated time to promote energy-saving knowledge in rural elementary schools, covering a total of 15 schools.
 - Hsinchu County: (1) Shilei, (2) Xinle, (3) Jiaxing, (4) Jianshi, (5) Jingping, (6) Hengshan, (7) Meihua, (8) Neiwan, (9) Dadu, (10) Daping, (11) Taoshan, (12) Huayuan, (13) Baoshan
 - Kaohsiung City, Meinong District: (14) Longdu, (15) Jidong

Works Created for the General Public

- In April 2021, hosted the “Under the Big Tree Radio: One Leaf Knows Autumn, Data Analysis”, series consisting of 22 lectures. The series was featured on the homepage of National Tsing Hua University under the category of cultural and art events.

- In 2020, created the podcast series titled “Lifetime Benefits of Data Analysis,” comprising 21 episodes. As of March 10, 2022, the total number of listeners surpassed 550,000.
- The online version of Simulated Learning published in 2016 has exceeded 230,000 views.

Academic Service

Associate Editor of Simulation Modeling, Practice, and Theory (SIMPAT) (2009-2012)

Editorial Board of European Journal of Industrial Engineering (EJIE)(2009- now)

International Program Committee, Inter. Conf. on Modeling, Identification. and Control (IASTED) (09 -now)

Current Research Projects (2020-2023)

1. 2022-08-01 to 2023/07/31. Prediction of the Optimal Artificial Intelligence Model for Early Glaucoma Patients (111-2221-E-007-051-)
2. 2021-11-01 to 2023/01/31. Expert Control Method for Simulating the Operation Frequency of Components in Semiconductor Factory Air Conditioning Systems (110-2622-E-007-020-)
3. 2021-08-01 to 2022/10/31. Combining Two Batch Means Estimators through Linear Combination for Estimating the Variance of Sample Means of Output Data in Simulation Method (110-2221-E-007-110-).
4. 2021-06-01 to 2022/08/31. Smart Measurement and Management of Energy Consumption in Key Semiconductor Processes (110-2622-E-007-011-).
5. 2020-08-01 to 2021/10/31. Analytical Solution for System Reliability of Generalized Stochastic Network Systems with Rework - Correction of Literature Errors (109-2221-E-007-070-).
6. 2020-06-01 to 02021/08/31. Establishment of Automated Inspection for Silicon Carbide Semiconductor Crystal Column Defects and Enhancement of Reliability in Post-Processing Products (109-2622-E-007-017-CC2).
7. 2020-06-01 to 2021-08-31. Improvement and Automatic Control of Pulling Process Breakage Rate (109-2622-E-007-005-CC2).

Publications

Book

Statistics for a Lifetime: The Key to Big Data Analysis (in Chinese), first edition, 2017. fourth edition, 2022, Taipei.

Refereed Papers

1. Wheyming Tina Song and Yu-Fan Liao (2024). A Real-Time Automatic Structural-Loss Detection and Stopping Rule of Semiconductor Single-Crystal-Silicon-Growth $\langle 100 \rangle$ and $\langle 111 \rangle$. *IEEE Transactions on Semiconductor Manufacturing*. <http://ieeexplore.ieee.org/document/10586860>.(SCI)
2. Wheyming Tina Song, Chang Chiang Chen, Zi-Wei Yu, and Hao-Chuan Huang (2023). An effective AI model for automatically detecting arteriovenous fistula stenosis. *Scientific Report*. V. 13, Article numbr: 17659.
3. Song, W.-M. T., Lai, Ing-Chou, and Su , Yi-Zhu (2021). A statistical robust glaucoma detection framework combining retinex, CNN, and DOE using fundus images. *IEEE Access*. Digital Object Identifier 10.1109. ACCESS 2021.3098031
4. Song, W-M. T. The Song rule outperforms optimal-batch-size variance estimators in simulation output analysis, *European Journal of Operational Research*. June 2019. DOI:10.1016/j.ejor.2018.11.059 (SCI)
5. Song, W-M. T. and Lin, P. System Reliability of Stochastic Networks with Multiple Reworks, *Reliability Engineering and System Safety*, pp.258-268 (2018) (SCI).
6. Song, W-M. T. The Song Rule as a Validator of Analytical Results, — A Note Correcting System Reliability Results in a Review of the Literature, *IEEE Transactions on Reliability*, pp.1012-1024 (2017) (SCI).
7. Song, W-M. T. Grace Lin, and Zih-Yi Wu (2015) Computer-Supported Methodologies to Estimate the Eave Effect on Building Energy Consumption, Special issue on *Energy Assessment and Management in International Journal of Electronic Business Management (IJEEM)*
8. Song, W.-M. T., M. Chih, (2013) Run Length Not Required: Optimal-Mse Dynamic Batch Means Estimators for Steady-State Simulations. *European Journal of Operational Reserach* V. 229. pp. 114-123. (SCI)
9. Song, W.-M. T., M. Chih, and S. Chuang (2013) Variance Reduction Techniques on Generating M/M/1 Processes in Simulation Output Analysis. *IEEE Transactions on Automatic Control*, V. 58, No. 4, pp. 1035–1040
10. Chen, Yi-chun and Song, Wheyming T. (2012), Effects of Sample Sizes in Phases I and II on p Control Chart Performance Communications in Statistics - Theory and Methods. 41. pp. 4047 – 4068. (SCI)
11. Song, W.-M. T., and Bruce Schmeiser (2011), Displaying statistical point estimates using the leading-digit rule. *IIE Transaction*. 43, pp. 851–862.(SCI)
12. Song, W.-M. T. and Chen, Yi-chun (2011), Eighty Univariate Distributions and their Relationships Displayed in a Matrix Format, *IEEE Transactions on Automatic Control*, Vol. 56, No. 8, pp. 1979-1984. (SCI)
13. Song, W.-M. T. (2011) A Finite-Memory Algorithm of Batch Means Estimators in Simulation Output Analysis, *IIE Transactions*, pp. 703-711 (SCI)

A finite-memory algorithm for estimating the variance of the sample mean

14. Song, W.-M. T., Chih, M.C., and Bair, A. E. (2010). Improving the Efficiency of Physical Examination Services, *Journal of Medical System*, Vol. **34**, No. **4**, pp. 579-590. (SCI)
15. Song, W.-M. T. and Chih, M.C., (2010). Extended Dynamic Partial-Overlapping Batch Means Estimators for Steady-State Simulations, *European Journal of Operational Research*, **230**, pp. 640-651. (SCI)
16. Song, W.-M. T, Chiu, W.C., Goldsman, D., and S. L. Liu (2010). Importance Sampling Techniques for Estimating the Bit Error Rate in Digital Communication Systems, *Journal of Chinese Institute of Industrial Engineering*, Vol. **27**, No. **1**, pp.1-14, 2010. (EI, TSSCI)
17. Bair, A. E., Song, W.-M. T., Chen, Y.C., and Morris, B. A. (2010). The Impact of Inpatient Boarding on ED Efficiency: A Discrete-Event Simulation Study, *Journal of Medical System*, **34**(5), pp. 919-929. (SCI).
18. Song, W.-M. T. and Schmeiser, B. (2009). Omitting Meaningless Digits in Point Estimates: the Probability Guarantee of Leading-Digit Rules, *Operations Research*, **57**, 109 – 117. (top 5%, total cites; SCI)
19. Song, W.-M. T., Chia-Jung Chang, and S.L. Liu (2009). Robust Confidence Intervals for the Bernoulli Parameters, *Communications in Statistics – Theory and Methods*, **38**, 1 – 17. (SCI)
20. Yang, T. K., Song, W.-M. T., and Chih, M.C. (2009). Re-Visit the Dynamic-Overlapping-Batch-Means Estimator in Simulation Output Analysis, *Journal of Chinese Institute of Industrial Engineering*, Vol. **26**, No. **6**, pp.499-509, 2009. (EI, TSSCI)
21. Chiu, W.C., Goldsman, D., and Song, W.-M. T (2007). Bias-Aware Linear Combinations of Variance Estimators, *WSEAS Transactions of Electronics*, **4**, 167-173. (EI)
22. Song, W.-M. T. (2007). A finite-memory algorithm for Estimating the Variance of the Sample Mean, *IIE Transaction*, **39**, 703-712. (SCI)
23. Song, W.-M. and W.C. Chiu (2007). A Five-class Variance Swapping Rule for Simulation Experiments - A correlated-Blocks design, *IIE Transaction on IE Research*, **39**, 713-722. (SCI)
24. Song, W.-M. T. (2005). “Relationships Among Some Univariate Distributions,” *IIE Transactions* **37**, No. **7**, 651–656. (SCI)
25. Song, W.-M. T., C. C. Su, and W.-C. Chu (2005). A Pseudo-Random Assignment Strategy for the Estimation of Quadratic Response Surface Metamodels, *IIE Transactions on IE Research*, **37**, 657–666. (SCI)
26. Tseng, S.-T., Song, W.-M. and Chang, Y.-C. (2005). An Initial Intercept Iteratively Adjusted (IIIA) Controller: An Enhanced Double EWMA feedback

- Control Scheme, *IEEE Transactions on Semiconductor manufacturing*, **18**, 448-458. (SCI)
27. Song, W.-M. and C.C. Su (2002). Correlated Simulation Experiment in Quadratic Response Surface Designs *Journal of the Chinese Institute of Industrial Engineers*, **19**, 13-18. (in Chinese)(EI)
 28. Chen, H., W.T. Song and Z. Lee (2002). RA-Quadsection Methods for Two-dimensional Stochastic Rooting Finding, *Journal of the Chinese Institute of Industrial Engineers*, **19**, 93-104. (in Chinese)(EI)
 29. Nelson, W., Swan, J., Goldsman, D., and Song, W.-M. (2001). Simple Procedures for Selecting the Best Simulated System when the Number of Alternatives is Large, *Operations Research*, **49** 950-963. (SCI)
 30. Song, W.-M. T. and C.C. Su (1998). A Three-Class Variance Swapping Technique for Simulation Experiments, *Operations Research Letter*, No. 1-2, 63–70. (SCI)
 31. Song W.-M. T. and Shih, N.H. (1998). Estimating a Multi-Gaussian Probability Using Adaptive Importance Sampling with a Truncated Gaussian Biasing Distribution, *International Journal of Operations and Quantitative Management*, **4**, 177 –185. (SCI)
 32. Kao, Chiang, W.-M. T. Song, and S.P. Chen (1997). A Modified Quasi-Newton Method for Simulation Optimization, *International Transactions in Operational Research*, **4**, 223 - 233. (SCI)
 33. Song, W.-M. T., C. C. Su, and C. T. Chiang (1997). Pseudo-Random Number Assignment Strategies in Taguchi Parameter Design, *Journal of the Chinese Institute of Industrial Engineering*, **14**, 267–273. (in Chinese)(EI)
 34. Song, W.-M. T. (1996). On the Estimation of Optimal Batch Sizes in the Analysis of Simulation Output, *European Journal of Operational Research*, **88**, 304–319. (SCI)
 35. Song, W.-M. T. and C.C. Su (1996). An Extension of the Multiple-Blocks Strategy on Estimating Simulation Metamodels, *IIE Transactions on IE Research*, **28**, 511-519. (SCI)
 36. Song, W.-M. T., L.C. Hsiao, and Y.J. Chen (1996). Generation of Auto-correlated Random Variables in the Analysis of Simulation Input Analysis, *European Journal of Operational Research*, **94**, 194–202. (SCI)
 37. Song, W.-M. T., and C. C. Su (1996). Pseudo-Random Number Assignment Strategies—A Correlated Random Block Effect Metamodels, *Journal of the Chinese Institute of Industrial Engineering*, **13**, 263–269. (in Chinese)(EI)
 38. Shih, N.H. and W.-M.T. Song (1996). “Correlation-Induced Variance Reduction in Regenerative Simulation,” *Operations Research Letters*, Vol. 19, No. 1, pp. 17-23.

39. Shih, N.H. and W.-M. T. Song (1995). Estimating Simulation Metamodels using Correlated Control Variates, *Communications in Statistics—Simulation and Computation* **24**, 79–90. (SCI)
40. Shih, N.H. and Song W.-M. T. (1995). Robust Consideration on Importance Sampling in Digital Communication System, *Journal of the Chinese Institute of Engineers*, **18**, 713–718. (EI)
41. Song, W.-M. T. and B.W. Schmeiser (1995). Optimal Mean-Squared-Error Batch Sizes, *Management Science*, **41**, 110–123. (SCI)
42. Song, W.-M. T., C. C. Su, and B. R. Hwang (1995). Pseudo-random number Assignment Strategy: The Relationship between Simulation Model, Meta-model, and Experiment Design, *Journal of the Chinese Institute of Industrial Engineering*, **12**, 193–201. (in Chinese)(EI)
43. Song, W.-M. T., and Y.J. Chen (1995). Generation of Autocorrelated Random Variables Considering Lag-one and Lag-two Correlation Coefficients, *Journal of the Chinese Institute of Industrial Engineering*, **12**, 305-313. (in Chinese)(EI)
44. Song, W.-M. T. and B.W. Schmeiser (1993). Variance of the Sample Mean: Properties and Graphs of Quadratic-Form Estimators, *Operations Research*, **41**, 501-517. (SCI)
45. Su, C.C. and W.-M. T. Song (1993). Pseudo-random Number Assignment Strategy in Orthogonal Array Designs, *Journal of the Chinese Institute of Industrial Engineering* **10**, 187-193. (in Chinese)(EI)
46. Song, W.-M. T. and B.W. Schmeiser (1988). On the Dispersion Matrix of Variance Estimators of the Sample Mean in the Analysis of Simulation Output, *Operations Research Letters*, **7**, 259-266. (SCI)

Conference Papers

1. Song, W.-M. T. (2016). Simulation and the Song Rule as Spotters and Validators of Analytical Results: A Note Correcting “System Reliability Results” in a Review of the Literature. the Summer Computer Simulation Conference SCSC), July 24-27, 2016.
2. Song, W-M. T. (2014). The 7-Eleven Rule in the Simulation Output Analysis. 2014 Asia Pacific Industrial Engineering and Management Systems (APIEM) Conference. October. Jeju, Korea, 12-15. 2014.
3. Song, W-M. T. Grace Lin, Zih-Yi Wu (2014). “Computer-Supported Methodologies to Estimate the Eave-Effect of Building Energy Consumption”, The 2014 18th IEEE International Conference on Computer Supported Cooperative Work in Design. May 20-23, 2014.

4. Song, W-M. T. and C. Y, Chian (2013). “A novel approach for vascular sounds of arteriovenous fistulas and vascular stenosis”. 13 the Asia Pacific Regional Meeting of the International Foundation for Production Research (APIEM),Philippines December 3-6, 2013.
5. Song, W-M. T. and Michael Chuang (2013). “On the Optimal Routing Policy in terms of Reliability for Logistics Transportation Management”. The 3rd International Forum and Conference on Logistics and Supply Chain Management (LSCM), Bali, Indonesia. June 26-30, 2013.
6. Chuang, Samping and Song, W. T. (2011), “A Well-Defined Interpretation of the Rule of Thumb for the Bernoulli Parameter”, Proceedings of the 7th International Conference on Mathematics, Statistics and its Applications, July 21-23, 2011, Bangkok, Thailand.
7. Song, W. T., Lin, C. H Chao-Hung Lin, and Chunag, Michael (2011), “ Reliability Tests on Resin Coated Insulation System for Electrical Transformers”, Proceedings of the 7th International Conference on Mathematics, Statistics and its Applications, July 21-23, 2011, Bangkok, Thailand.
8. Song, W-M. T. and Chen, Yi-chun (2010), “ Relationships Among Eighty Univariate Distributions Displayed in a Matrix Format, Proceedings of the Winter Simulation Conference 2010, Baltimore, Maryland, U.S.A.
9. Bair, Aaron E., Song, Wheyming T., Chen, Yi-chun, and Morris, Beth A. (2009), “The Impact of Inpatient Boarding on Emergency Department Crowding: Discrete-Event Simulation Study, Proceedings of the 2009 Spring Simulation Multiconference: 42nd Annual Simulation Symposium, San Diego, California, U.S.A.
10. Song, W.-M. T. and Bruce Schemiser (2009), “Omitting Meaningless Digits: Analyzing LDR(1), the Standard Leading-Digit Rule” , Proceedings of the 2009 Winter Simulation Conference, December 7-10, Austin, Texas, USA.
11. Song, W.-M. T. and Bruce Schmeiser (2008), “ Displaying Statistical Point Estimators: The Leading-Digit Procedure”, Proceedings of the 2008 Winter Simulation Conference, December 7-10, Florida, USA, 407 –412.
12. Song, W.-M. T, Aaron E. Bair, and Mingchang Chih (2008), “A Simulation Study on the Impact of Physician Starting Inquiry Time and Staggered Arrival Policy in a Physical Examination Service”, Proceedings of the 2008 Winter Simulation Conference, December 7-10, Florida, USA.
13. Song, W.-M. T and Mingchang Chih (2008), “Data Dependent Finite Memory Algorithm in the Analysis of Output Analysis”. Proceedings of the 2008 Winter Simulation Conference, December 7-10, Florida, USA.
14. Song, W.-M. T., and C. J. Chang. (2006), “Improved Confidence Intervals for the Bernoulli Parameter”, Proceedings of the Joint Statistical Meetings, August 6-10, Seattle, USA.

15. Song, W.-M. T., W.C. Chiu, and Goldsman, D. (2005), "Importance Sampling Techniques for Estimating the Bit Error Rate in Digital Communication Systems", Proceedings of the 2005 Winter Simulation Conference, December 3-6, Orlando,FL, USA. 2710-2717.
16. Song, W.-M. and W.C. Chiu (2004), "Estimating the Bit Error Rate in Digital Communication Systems," IASTED International conference on Communications Systems and Applications, July 8-10, Banff, Canada.
17. Song, W.-M. and Schmeiser, B. T. Song. (2003) "Reporting Meaningful Digits of Point Estimators for Random Experiments," IASTED International conference on Artificial Intelligence and Soft Computing (ASC 2003), No. 385004. July 14-July 16, Banff, Canada.
18. Cheng-Shang Chang, Y-M Chiu, and W.-M. T. Song. (2001) "On the Performance of Multiplexing Independent Regulated Inputs," ACM SIGMETRICS/Performance Conference, 184-193.
19. Song, W.-M. T. and T.-K. Yang (2000), "On the Estimation of Optimal Sizes of Overlapping Batch mean Estimators", Proceeding of the 5th Annual International Conference on Industrial Engineering-Theory, Applications and Practice, December 13-15, W719.2
20. Song, W.-M. T., C.-C. Su, and W.-C. Chu. (2000), "Correlated Simulation experiment in Quadratic response surface Design", Proceeding of the 5th Annual International Conference on Industrial Engineering-Theory, Applications and Practice, December13-15, R706.1
21. Song, W.-M. T., and Shin, N. H. (1998). "Estimating a Multi-Gaussian Probability Using Adaptive Importance Sampling with a Truncated Gaussian Biasing Distribution," *Proceeding of Quantitative Management Techniques and Applications*, 101-106.
22. Song, W.-M. T., N.-H. Shih, and M.-J. Yuan (1997) "Optimal Quadratic-form Estimator of the Variance of the Sample Mean", *Proceedings of the 1997 Winter Simulation Conference*, 246-252.
23. Schmeiser, B. and Song, W.-M. T. (1996) "Batching Methods in Simulation Output Analysis: What we know and what we don't" *Proceedings of the 1996 Winter Simulation Conference*, 122-127.
24. Song, W.-M. T. and C. C. Su (1995), "Designing Pseudo-Random Number Assignment Strategies for Simulation Experiments" *Proceedings of the 1995 Winter Simulation Conference*, 1400-1403.
25. Song, W.-M. T. and B.W. Schmeiser (1994), "Reporting the Precision of Simulation Experiments," *Proceedings of New Directions in Simulation for Manufacturing and Communication*, 402-407
26. Shih, N.-W. and W.-M. T. Song (1994), "On the Robustness Consideration of Importance Sampling," *Proceedings of New Directions in Simulation for Manufacturing and Communication*, 326-329.

27. Shih, N.-W. and W.-M. T. Song (1994), "Adaptive Importance Sampling with Truncated Gaussian Biasing Distribution," *Proceedings of the Third Statistics Conference in Taiwan*, 46-62.
28. Song, W.-M. T. and L.C. Hsiao (1993), "Generation of Autocorrelated Random Variables with a Specified Marginal Distribution," *Proceedings of the Winter Simulation Conference*, 374-377.
29. Schmeiser, B.W. and W.-M. T. Song (1989), "Inverse-Transformation Algorithms for Some Common Stochastic Processes," *Proceedings of the 1989 Winter Simulation Conference*, 490-496.
30. Song, W.-M. T. and B.W. Schmeiser (1988), "Minimal-Mse Linear Combinations of Variance Estimators of the Sample Mean," *Proceedings of the Winter Simulation Conference*, 414-421.
31. Song, W.-M. T. and B.W. Schmeiser (1988), "Estimating Standard Error: Empirical Behavior of Asymptotic Mse-Optimal Batch Size," *Proceedings of the 1988 Symposium on the Interface of Computing Science and Statistics*, 575-580.
32. Schmeiser, B.W. and W.-M. T. Song (1987), "Correlation Among Estimators of the Variance of the Sample Mean," *Proceedings of the 1987 Winter Simulation Conference*, 309-316.