

VITA

THEODORE T. ALLEN

Department of Industrial, Welding & Systems Engineering
The Ohio State University, 210 Baker Systems, 1971 Neil Avenue, Columbus, OH 43210

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EDUCATION

Ph.D. 1997 **THE UNIVERSITY OF MICHIGAN**, Industrial and Operations Engineering.
M.S. 1992 **UCLA**, Physics (Solid State).
B.A. 1991 **PRINCETON UNIVERSITY**, Engineering Physics (Honors).

RESEARCH INTERESTS

The intersection of statistics, operations research, and engineering including cognitive engineering

SELECTED HONORS AND SERVICE

2013 *Quality Approaches in Higher Education* journal Best Paper Prize
2010-present Fellow of The *American Society of Quality* (ASQ)
2000, 2001, 2010, 2011, and 2013 “Alpha Pi Mu Outstanding Faculty Awards”
(top teaching award from the Industrial & Systems Engineering undergraduate seniors),
“Charles E. MacQuigg Student Award for Outstanding Teaching” from The Ohio State University (OSU),
2010 National Academy of Engineering selected as 1 of 55 “outstanding educators” from approximately 200
nominated to attend the FOEE Symposium
INFORMS Prize Committee Member Overseeing Nicholson and von Neumann prizes
2007-2010 Chair of Lloyd S. Nelson Award Chair of the ASQ (Gives a *JQT* best paper prize)
2nd Place INFORMS Section on Public Programs, Services & Needs (2011) inaugural best paper competition
Voting Related Press: CNN situations room, CNN American morning
Honda Fellow 2008
2004-2008 Associate Editor of the *Journal of Manufacturing Systems*

BOOKS

Allen, T. T. (2011), *Introduction to Discrete Event Simulation Theory with Applications: Voting Systems, Health Care, Military, and Manufacturing*, Springer Verlag: London (<http://www.springer.com/978-0-85729-138-7>).
Allen, T. T. (2010), *Introduction to Engineering Statistics and Lean Sigma: Statistical Quality Control and Design of Experiments and Systems*, 2nd ed., Springer Verlag: London (<http://www.springer.com/engineering/production+eng/book/978-1-84882-999-2>).
([TOC](#) [Preface](#) [Sample](#) [Buy](#))

REFEREED JOURNAL PUBLICATIONS

1. Tseng, S.H. and T. T. Allen (accepted), “A Simple Approach for Multi-fidelity Experimentation Applied to Financial Engineering,” *Applied Stochastic Models in Business and Industry*. 2014
2. Yang, M., M. Fry, D. Kelton, and T. T. Allen (to appear), “Improving Voting Systems through Service-Operations Management,” *Production and Operations Management*. 2014
3. Afful-Dadzie, A. and T. T. Allen (2014), “Data-Driven Cyber Vulnerability Maintenance Policies,” *Journal of Quality Technology*, 26 (3), 1-17. 2014
4. Ferhatosmanoglu, N., T. T. Allen, and U. Catalyrek (2014), “Mitigating Bias in Planning Two-Color Microarray Experiments,” *Int. J. of Data Mining and Bioinformatics*. 2014

5. Allen, T. T., S. Artis, A. Afful-Dadzie, and Y. Allam (2013), "Case Study Application of Blended Learning for an Engineering Simulation Course," *Quality Approaches in Higher Education*, 4(1), 13-22. 2013
6. Yang, M., T. T. Allen, M. Fry, and D. Kelton (2013), "The Call for Equity: Simulation-Optimization Models to Minimize the Range of Waiting Times," *IIE Transactions*, 45, 1-15. 2013
7. Allen, T. T. and H. Xiong (2012), "Pareto charting using multifield freestyle text data applied to Toyota Camry user reviews," *Applied Stochastic Models in Business and Industry*, 28 (2), 152-163. 2012
8. Allen, T. T. and R. Rajagopalan (2011), "A Bayesian plotting method for fractional factorial data analysis," *Journal of Quality Technology*, 43, 3, 224-235. 2011
9. Allen, T. T. and S. Tseng (2011), "Variance Plus Bias Optimal Response Surface Designs With Qualitative Factors Applied to STEM Choice Modeling," *Quality and Reliability Engineering International*, 27. (<http://rube.asq.org/edu/2013/07/best-practices/case-study-application-of-blended-learning-in-an-engineering-simulation-course.pdf>, Winner 2013 Best Paper Prize) 2011
10. Allen, T. T., S. Tseng, K. S., M. A. Megimose-McClay (2010), "Improving the Hospital Discharge Process with Six Sigma Methods," *Quality Engineering*, 22, 1-8 (<http://www.asq.org/pub/qe/2010/vol22-no1/>). 2010
11. Ferhatosmanoglu, N., T. T. Allen, and G. Canahuat (2009), "Vector Space Search Engines That Maximise Expected User Utility," *International Journal of Mathematics in Operational Research*, 1(3), 279 – 302 (<http://www.cse.ohio-state.edu/~canahuat/publications/ijmor.pdf>). 2009
12. Allen, T. T., N. Chantarat, and C. Taslim (2009), "Fractional Factorials that Maximize the Probability of Identifying Important Factors," *International Journal of Industrial and Systems Engineering*, 4 (2), 133-150 (<http://www.inderscience.com/browse/index.php?journalID=188&year=2009&vol=4&issue=2>). 2009
13. Huang, D., T. T. Allen, W. Notz, R. A. Miller (2006), "Sequential Kriging Optimization Using Variable Fidelity Data," *Structural & Multidisciplinary Optimization*, 32 (5) 369-382 (<http://www.springerlink.com/content/74033v631215r491/>). 2009
14. Brady, J. E. and T. T. Allen (2006), "Six Sigma: A Literature Review and Suggestions for Future Research" *Quality and Reliability Engineering International*, 22 (3), 335-367 (<http://www3.interscience.wiley.com/cgi-bin/fulltext/112587939/PDFSTART>). 2006
15. Huang, D., T. T. Allen, W. Notz, and N. Zheng (2006), "Global Optimization of Stochastic Black-Box Systems via Sequential Kriging Meta-Models," *The Journal of Global Optimization*, 34 (3), 427-440 (<http://www.springerlink.com/content/w8654353647525vx/>). 2006
16. Chantarat, N., T. T. Allen, N. Ferhatosmanoglu, and M. Bernshteyn (2006), "A Combined Array Approach to Minimize Expected Prediction Errors in Experimentation Involving Mixture and Process Variables," *The International Journal of Industrial and Systems Engineering*, 1, 129-147 (<http://www.inderscience.com/storage/f210811354121679.pdf>). 2006
17. Huang, D. and T. Allen (2005), "Design and Analysis of Variable Fidelity Experimentation Applied to Engine Valve Heat Treatment Process Design," *Journal of the Royal Statistical Society: Series C*, 54, 2, 1-21 (<http://www3.interscience.wiley.com/cgi-bin/fulltext/118689819/PDFSTART>). 2005
18. Allen, T. T., and K. Maybin (2004), "Using Focus Group Data to Set New Product Prices," *Journal of Product and Brand Management*, 13, 1, 15-24 (<http://www.emeraldinsight.com/Insight/ViewContentServlet?contentType=Article&Filename=/published/emeraldfulltextarticle/pdf/0960130102.pdf>). 2004
19. Allen, T. T., Bernshteyn, M., L. Yu, and K. Kabiri (2003), "A Comparison of Alternative Methods for Constructing Meta-Models for Computer Experiments," *The Journal of Quality Technology*, 35 (3), 1-17 (http://www.asq.org/data/subscriptions/jqt_open/2003/july/qtec-35-3-264.pdf). 2003
20. Ribardo C. and Allen, T. T. (2003), "An Alternative Desirability Function for Achieving 'Six Sigma' Quality," *Quality and Reliability Engineering International*, 19, 227-240 (<http://www3.interscience.wiley.com/cgi-bin/fulltext/102530334/PDFSTART>). 2003
21. Allen, T. T., L. Yu, J. Schmitz (2003), "The Expected Integrated Mean Squared Error Experimental Design Criterion Applied to Die Casting Machine Design," *Journal of the Royal Statistical Society: Series C*, 52, 1, 1-15 (<http://www3.interscience.wiley.com/cgi-bin/fulltext/118874160/PDFSTART>). 2003
22. Allen, T. T. and M. Bernshteyn (2003), "Supersaturated Designs that Maximize the Probability of Finding the Active Factors," *Technometrics*, 45 (1), 1-8 2003

(<http://pubs.amstat.org/doi/abs/10.1198/004017002188618734>).

23. Brady, J. E. and T. T. Allen (2002), "Case Study Based Instruction of SPC and DOE," *The American Statistician*, 56, 4, 1-4 (<http://pubs.amstat.org/doi/pdf/10.1198/000313002614>). 2003
24. Allen, T. T., R. W. Richardson, D. Tagliabue, and G. Maul (2002), "Statistical Process Design for Robotic GMA Welding of Sheet Metal," *The Welding Journal*, 81, 5, 69s-77s (<http://files.aws.org/wj/supplement/05-2002-ALLEN-s.pdf>). 2002
25. Allen, T. T., and L. Yu (2002), "Low Cost Response Surface Methods From Simulation Optimization," *Quality and Reliability Engineering International*, 18, 1, 5-17 (<http://www3.interscience.wiley.com/cgi-bin/fulltext/91016170/PDFSTART>). 2002
26. Allen, T. T., W. Ittiwattana, R. W. Richardson, and G. Maul (2001), "A Method for Robust Process Design Based on Direct Minimization of Expected Loss Applied to Arc Welding," *The Journal of Manufacturing Systems*, 20, 5, 329-348 (<http://www-iwse.eng.ohio-state.edu/ISEFaculty/allen/AllenIttiwattanaRichardsonMaul2001.pdf>). 2001
27. Allen, T. T., L. Yu, and M. Bernshteyn (2000), "Low Cost Response Surface Methods Applied to the Design of Plastic Snap Fits," *Quality Engineering*, 12, 583-591 (<http://www.informaworld.com/smpp/content~db=all~content=a779115291>). 2000
28. Koc M., Allen T. T., Jiratheranat S., and Altan, T. T. (2000), "The use of FEM and experimental design to investigate tube hydroforming of a simple geometry," *The International Journal of Machine Tools and Manufacture*, 40, 2249-2266 (http://journals.ohiolink.edu/ejc/pdf.cgi/Ko_Muammer.pdf?issn=08906955&issue=v40i0015&article=2249_tuofaddgfshp). 2000
29. Allen, T. T., P. Afshari, K. Kabiri, and G. Herrin (1999), "Robust Engineering Using Numerical Methods: Application to the Design of D-Shaped Shafts," SAE Technical Paper # 98PC-229, 1999 *Society of Automotive Engineers Journal* (<http://papers.sae.org/980295>). 1999

SELECTED MANUSCRIPTS IN THE REVIEW PROCESS

1. Hou, C., Allen, T. T., and Hall, N. (under review), "Models of Information Flow in Project Management."
2. Afful-Dadzie, A. and Allen, T. T. (under review), "Control Charting Methods for Autocorrelated Cyber Vulnerability Data."
3. Allen, T. T., Xiong, H., and Afful-Dadzie, A. (under review), "A Directed Topic Model Applied to Call Center Improvement."
4. Xie, C. and Allen, T. T. (under revision), "Simulation and Experimental Design Methods for Job Shop Scheduling with Material Handling (JSSMH): A Survey."
5. Allen, T. T. and Yang, M. (under preparation), "Satisfying Performance Requirements for Single and Multiple Systems in Simulation Experiments."
6. Xie, C., Allen, T. T., and Bayraksan, G. (under preparation), "Finite Horizon Dynamic Approximate Empirical Reward Processes."
7. Tseng, S. H. and Allen, T. T. (under revision), "A Two Model Regression Diagnostics with Applications in Furniture Design."

MAGAZINE OR NEWSPAPER PUBLICATIONS

8. Allen, T. T. (2013), Delving into the reasons for long lines can bring solutions, Orlando Sentinel, January 8, http://articles.orlandosentinel.com/2013-01-08/news/os-ed-long-lines-voting-florida-010813-20130107_1_long-lines-ballot-length-turnout. 2013
9. Samuelson, D. A., T. T. Allen, and M. Bernshteyn (2007), "The Right Not to Wait," *ORMS Today*, December (<http://www.lionhrtpub.com/orms/orms-12-07/voting.html>). 2007
10. Allen, T. T. and M. Bernshteyn (2006), "Mitigating Voter Wait Times," *Chance Magazine, The American Statistical Association*, Autumn (<http://www.amstat.org/publications/chance/articleIndex.cfm>). 2006

11. Allen, T. T., M. Bernshteyn, and D. A. Samuelson (2006), Voting Queues Present Complicated Problems, Letters to the Editor, *OR/MS Today* (<http://www.lionhrtpub.com/orms/orms-8-06/letters.html>, August). 2006

CONFERENCE PUBLICATIONS (REFEREED EXCEPT AS NOTED)

1. Reisensthal, P. H. and T. T. Allen (2014), "Application of Multifidelity Expected Improvement Algorithms to Aeroelastic Design Optimization," *10th AIAA Multidisciplinary Design Optimization Conference*, AIAA SciTech, 13-17 January, National Harbor, Maryland. 2014
2. Allen, T.T. and S.H. Tseng (2013), "A Magic Number versus Trickle Down Agent-Based Model of Tax Policy," *Proceedings of the 2013 Winter Simulation Conference*, R. Pasupathy, S.-H. Kim, A. Tolk, R. Hill, and M. E. Kuhl, eds. (<http://informs-sim.org/wsc13papers/includes/files/123.pdf>) 2013
3. Li, J., T. T. Allen, and K. Akab (2013), "Could Simulation Optimization Have Prevented 2012 Central Florida Election Lines," *Proceedings of the 2013 Winter Simulation Conference*, R. Pasupathy, S.-H. Kim, A. Tolk, R. Hill, and M. E. Kuhl, eds. (<http://informs-sim.org/wsc13papers/includes/files/183.pdf>) 2013
4. Afful-Dadzie, A. and T. T. Allen (2013), "Sufficiency Model-Action Clarification for Simulation Optimization Applied to an Election System," *Proceedings of the 2013 Winter Simulation Conference*, R. Pasupathy, S.-H. Kim, A. Tolk, R. Hill, and M. E. Kuhl, eds. (<http://informs-sim.org/wsc13papers/includes/files/094.pdf>) 2013
5. Afful-Dadzie, A. and T. T. Allen (2013), "Optimal Traditional Versus Online Instructional Method Selection," *ASEE Midwest Regional Conference*, R. Gustafson ed., Columbus, Ohio. 2013
6. Allen, T. T., S. M. Vinson, A. Raqab, and Y. Allam (2013), "Using SMERT to Identify Actionable Topics in Student Feedback," *ASEE Midwest Regional Conference*, R. Gustafson ed., Columbus, Ohio. 2013
7. Xie, C., T. T. Allen, and A. Raqab (2013), "Using Staged Control Charts for Educational Assessment," *ASEE Midwest Regional Conference*, R. Gustafson ed., Columbus, Ohio. 2013
8. Allen, T. T. and D. N. Vuckovich (2010), "An Open-Source Population Indifference Zone-Based Algorithm for Simulation Optimization," *Proceedings of the 2010 Winter Simulation Conference*, B. Johansson, S. Jain, J. Montoya-Torres, J. Hagan, and E. Yücesan, eds (<http://www.informs-sim.org/wsc10papers/021.pdf>). 2010
9. Davis, N. and T. T. Allen (2010), "A Simple Agent-Based Social Impact Theory Model of Student STEM Selection," *Proceedings of the 2010 Winter Simulation Conference*, B. Johansson, S. Jain, J. Montoya-Torres, J. Hagan, and E. Yücesan, eds (<http://www.informs-sim.org/wsc10papers/024.pdf>). 2010
10. Zheng, N., T. T. Allen, and W. Ittiwattana (2007), "Subset Selection and Optimization and For Selecting Binomial Systems Applied to Supersaturated Design Generation," *Proceedings of the 2007 Winter Simulation Conference*, Russell Barton editor (<http://www.informs-sim.org/wsc07papers/039.pdf>). 2007
11. Schenk, J. R., N. Zheng, and T. T. Allen (2005), "Multiple Fidelity Simulation Optimization of Hospital Performance Under High Consequence Event Scenarios," *Proceedings of the 2005 Winter Simulation Conference*, M. E. Kuhl, N. M. Steiger, F. B. Armstrong, and J. A. Joines, eds (<http://www.informs-sim.org/wsc05papers/110.pdf>). 2005
12. Menke, J., N. Chantararat, D. Farson, T. T. Allen (2005), "Statistical and numerical analysis for optimization of aluminum tube welding," *Trends in Welding Research Conference*, Pine Mountain GA, April 2005. 2005
13. Allen, T. T., N. Zheng, N. Chantararat, M. Bernshteyn (2004), "New Practical Objectives, Solution Methods, and Fractional Factorials," ASQ Fall Technical Conference, Roanoke Virginia. 2004
14. Chantararat, N., N. Zheng, T. T. Allen, and D. Huang (2003), "Optimal Experimental Design for Systems Involving Both Quantitative and Qualitative Factors," *Proceedings of the Winter Simulation Conference*, R. D. M. Ferrin and P. Sanchez (<http://www.informs-sim.org/wsc03papers/069.pdf>). 2003
15. Ribardo, C. and T. Allen (2001), "An Alternative Desirability Function for Achieving "Six Sigma" Quality," Web Proceeding Quality, Reliability and Statistics Section for INFORMS Miami (www-personal.engin.umich.edu/~shihang/informs_qsr/). 2001
16. Allen, T. T. and L. Yu (2000), "Low Cost Response Surface Methods For and From Simulation Optimization," *Proceedings of the Winter Simulation Conference*, R. Barton and J. Joines editors 2000

(<http://www.informs-sim.org/wsc00papers/093.PDF>).

17. Allen, T. T., W. Ittiwattanna, and M. Bernshteyn (2000), "A Method for Robust Machine Design Applied to Arc-Welding" *Third International Symposium on Tools and Methods of Competitive Engineering*, April 18-21, Delft, Netherlands. 2000
18. Richardson, R. W., T. T. Allen, D.P. Tagliabue, G. Maul (2000), "Statistical Process Design for Robotic Gas Metal Arc Welding of Sheet Metal," *Tenth International Conference: Computer Technology in Welding and Manufacturing*, Copenhagen, Denmark, June 6-7 (not refereed). 2000
19. Ribardo, C., Allen, T. T., Richardson, R., and Yapp, D. (2000), "Desirability Functions for Comparing Arc Welding Parameter Optimization Methods and For Addressing Process Variability Under Six Sigma Assumptions," *Proceedings of the 2000 International Conference on Advances in Welding Technology*, Orlando, FL, 12/00 (not refereed). 2000
20. Allen, T. T., R. W. Richardson, D. P. Tagliabue, and G. Maul (2000), "Statistical Process Design for Robotic GMAW of Sheet Metal," *Proceedings of the 2000 International Conference on Advances in Welding Technology*, Orlando, FL, 12/00 (not refereed). 2000
21. Allen, T. T. and L. Yu. "Low Cost Experimental Methods Applied to Aerospace Related Design," *Proceedings of the 3rd Annual World Congress on Multidisciplinary Optimization*, Niagara Falls/Amherst, New York, May 15-21, 1999. 1999
22. Maul, G., T. T. Allen, and Richard Richardson, "Arc Welding Process Optimization," *IEMS 98 International Conference*, Cocoa Beach, Florida. 1998
23. Botros, M. B., T. T. Allen, Tony Nava, "Minimizing the Fan Imbalance Excitation of an Automotive Blower System," SAE Technical Paper # 98PC-24, *1998 SAE International Congress*, Cobo Center, Detroit. 1998
24. Allen, T. T., "Robust Engineering Using Numerical Methods: Application to the Design of D-Shaped Shafts," SAE Technical Paper #98PC-229, *1998 SAE International Congress*, Cobo Center, Detroit. 1998
25. Botros, M. B., J. A. (Tony) Nava, T. T. Allen, "Interaction of HVAC Blower Fan & Motor Imbalance," *Proceedings of the IIAV Congress IV*, St. Petersburg, Russia, June 24-27, 1996. 1996

TECHNICAL REPORTS

1. Allen and Bernshteyn (2008), "Helping Franklin County Vote in 2008: Waiting Lines," Report to the Franklin County Board of Elections. <http://vote.franklincountyohio.gov/assets/pdf/press-releases/PR-07302008.pdf>. 2008
2. Allen, T. T. and M. Bernshteyn (2006), "Optimal Voting Machine Analysis," in DRE Analysis for May 2006 Primary, Steven Hertzberg ed., Cuyahoga County, Technical Report, Election Science Institute (http://www.sagata.com/resources/ESI_Cuyahoga_Final.pdf). 2006
3. Allen, T. T., S. Hertzberg, T. Warren (2006), "Election System Functional Threat Analysis," in DRE Analysis for May 2006 Primary, Steven Hertzberg ed., Cuyahoga County, Technical Report, Election Science Institute. 2006
4. Kinney, P., D. Farson, and T. T. Allen (2004), "Optimization of an Innovative Hybrid Welding Process for Structural Fabrication," SME Technical Paper, Product ID: TP04PUB257. 2004
5. Allen, T. T. (2003), *Introduction to Business Statistics and Six Sigma*, produced by Greyden Press, ISBN 0-9745912-0-3 (effectively a self-published book). 2003
6. Ribardo, C., T. T. Allen, R. Richardson, and D. Yapp (2001), "A Comparison of Arc Welding Parameter Optimization Methods," *Edison Welding Institute Technical Report*. 2001
7. Allen, T. T., C. Ribardo, R. Richardson, and D. Yapp (2001), "A desirability function for addressing process variability under six sigma assumptions," *Edison Welding Institute Technical Report*. 2001
8. Allen, T. T. and Liyang Yu, "The Odor Report," Submitted 1/20/98 to Visteon Corporation. 1998
9. Allen, T. T., D. Tagliabue, R. Richardson, G. Maul (1999), "A Statistical Process Design Procedure for the Arc Welding of Sheet Metal," *Edison Welding Institute Technical Report*. 1999
10. Allen, T. T. and Mike Bernshteyn, "New Experimental Methods Applied HVAC Case Joining," 1998

Submitted 3/30/98 to Visteon Corporation.

WORK EXPERIENCE

THE OHIO STATE UNIVERSITY, Industrial, Welding & Systems Engineering, Columbus, OH.

03-present Associate Professor
8/97-03 Assistant Professor
8/96-8/97 Instructor

FORD MOTOR COMPANY, Climate Control Operations (CCO), Advanced Engineering, Dearborn, MI.

5/95 - Used design of experiments (DOE) and computer-aided design (CAD) techniques to determine specs. for:
10/96

- AC blower wheel imbalance to limit case vibrations,
- Snap tabs for AC case joining,
- Tongue and groove seal to minimize air leakage of AC cases, and
- Pull-pull cable for sound and performance (not completed).

Correlated AC system performance, customer satisfaction, and warranty.

FORD MOTOR COMPANY, Corporate Quality, Reliability & AQP, Dearborn, MI.

5/94 -

- Coordinated a team of engineers developing the ideal air handling case-joining strategy for all vehicles.

5/95

- Responsibilities included finite element analysis (FEA) design, rapid prototyping, and incorporation into prototype injection molds, also, GD&T, budgeting (\$215K), modeling & analysis.

8/93 **THE UNIVERSITY OF MICHIGAN**, Department of Industrial and Operations Engineering.
Teaching Assistant: Statistical Quality Control (IOE 466), Design of Experiments (IOE 465).

CHRYSLER CORPORATION, Problem Identification and Resolution, Highland Park, MI.

8/94 -

- Led student team (under Professors Nair and Wu) in postmortem analysis of quality/corporate problems.

6/95

- Used time series methods to demonstrate the dependence of warranty data on supplier SPC data.

EMERSON ELECTRIC CO., Fusite Division, 6000 Fernview, Cincinnati, OH.

6-8/93 Used DOE techniques to fix an adhesion problem in a critical injection molding process.

TEACHING EXPERIENCE

Courses Developed and Taught at The Ohio State University

Undergraduate: Statistical Modeling, Queuing, and Lean Production (INDENG 513) - the mathematical framework of simulation and queuing in the context of recent developments in lean manufacturing.
Statistical Quality Control and Quality Management Systems (INDENG 509) - statistical quality control, ISO9000, and the 6σ process for quality improvement.
Undergraduate and Graduate: Design of Engineering Experiments (INDENG 610) - statistical planning of engineering experiments, including Taguchi methods and their role in the engineering design process.
Graduate: Statistical Quality Control and Quality Management Systems (INDENG 709) - statistical quality control, ISO9000, and the 6σ process for quality improvement.
Empirical Model Building in Industrial Engineering (INDENG 700) – utility theory and simulation optimization for system design and optimal data collection to support these activities

ACADEMIC ADVISING: THE OHIO STATE UNIVERSITY

Graduated Doctoral Students

1. Xie, Chen (2014), “Dynamic Approximate Empirical Reward Processes”
2. Afful-Dadzie, Anthony (2012), “Robust Optimal Maintenance Policies and Charts for Cyber Vulnerability Management.”
3. Soo Ho Lee (2012), “Comparison and Application of Probabilistic Clustering Methods for System Improvement Prioritization.”
4. Hui (Paul) Xiong (2011), “Combining Subject Expert Experimental Data with Standard Data in Bayesian Mixture Modeling.”
5. Rajagopalan, Ravishankar (2009), “Response-Probability Model Analysis Plots with Applications In Engineering and Clinical Research.”

6. Taslim, Cenny (2008), “Multi-State Experimental Planning and Analysis For Forward-Inverse Regression Applied to Genetic Network Modeling.”
7. Zheng, Ning (2007), “Discovering Interpretable Topics in Free-Style Text: Diagnostics, Rare Topics, and Topic Supervision.”
8. Tseng, Shi-Hsien (2007), “Bayesian and Semi-Bayesian Regression Applied to Manufacturing Wood Products.”
9. Schenk, Jason (2007), “Meta-Uncertainty and Resilience with Applications in Intelligence Analysis.”
10. Ferhatosmanoglu, Nilgun (2007), “Optimal Design of Experiments for Emerging Biological and Computational Applications.”
11. Brady, James (2005), “Six Sigma and the University: Research, Teaching, and Meso-Analysis,” (one publication in the *American Statistician*, one publication in *Quality and Reliability Engineering International*, and one article under preparation for the *Journal of Quality and Technology*).
12. Huang, Deng (2005), “Experimental Planning and Sequential Kriging Optimization Using Variable Fidelity Data,” (co-adviser with Allen Miller, one publication in the *Journal of the Royal Statistical Society: Series C* and an accepted article in *The Journal of Global Optimization* and a submission under preparation to *Structure*).
13. Chantararat, Navara (2003), “Modern Design of Experiments Methods for Screening and Experimentations with Mixture and Qualitative Variables” (resulted in one publication in the *International Journal of Industrial Systems Engineering* process and a publication in the *Winter Simulation Conference*).
14. Ittiwattana, Waraphorn (2002), “A Method for Simulation Optimization with Applications in Robust Process Design and Locating Supply Chain Operations” (resulted in a publication on an alternative to Taguchi Methods in the refereed *Journal of Manufacturing Systems*).
15. Bernshiteyn, Mikhail (2001), “Heuristics that Combine Population and Multiple Comparison Based Searches with Application to Model Robust Supersaturated Experimental Designs” (resulted in publications in the top journals *Technometrics* and the *Journal of Quality Technology*).
16. Ribardo, Charles (2000), “Desirability Functions for Comparing Arc Welding Parameter Optimization Methods and for Addressing Process Variability Under Six Sigma Assumptions” (resulted in a publication in the refereed journal *Quality and Reliability Engineering International* and the award of finalist in the INFORMS QSR student paper competition, Co-adviser with Prof. R. W. Richardson).
17. Yu, Liyang (2000) “Expected Modeling Errors and Low Cost Response Surface Methods” (resulted in publications in the reputed refereed journals *Journal of the Royal Statistical Society: Series C*, *Quality Engineering*, and *Quality and Reliability Engineering International*).

Current Doctoral Students

1. Chengjun Hou – (2015) Dynamic Programming for Parametric Uncertainty with Applications in Project Management and Cyber Security
2. Sayak RoyChowdhury – (tentative) Sequential Kriging Optimization via Partitioned Envelopes And Gradient Search
3. Shijie Huang – (tentative) Comprehensive Modeling and Prediction of Waiting Losses with Applications In Election and Hospital Systems
4. Zhenhuan Sui – (tentative) Automatic Simulation and Big Data-Based Optimization
5. Sumaiya Islam – (tentative) Quality Methods in Cyber Security

CONSULTING

I have served as a consultant on projects at companies that include:

ACLU, Lextant, LaBarge, Lucent, Nationwide Services, Timken, and Net Jets.

I am co-founder of the statistics software and consulting company Sagata Ltd., see www.sagata.com for more information. Products include: Sagata® Regression Professional and Sagata® Regression Standard. Sagata has supplied over 4,000 products to users world-wide.

Accomplishments included:

1. Lead team to significantly reduced average patient chart mistakes and average discharge times at a community hospital.
2. Proposed and lead the implementation in 2008 of perhaps the first principled approaches for deciding how many voting machines are needed and how they should be allocated.
3. Developed methods to forecast accurately maintenance costs associated with an aging fleet of aircraft.

OTHER HONORS AND SERVICE

Ohio State Senate Apportionment Ad Hoc Advisory Committee 2010

Featured on “The Big Story” in Columbus 10TV News August 14, WOSU, and NYT & Dispatch Page 1 Articles

Vice chairperson of Academic Relations of the Public Programs and Processes Section of INFORMS

Editorial board of the *International Journal of Industrial & Systems Engineering*

Editorial board of the *International Journal of Software and Systems Engineering*

Editorial board of the *Journal of Experimental Design and Process Optimisation*

Selected to Standard & Poor's Society of Industry Leaders

Elected Council Member for two, two year terms, INFORMS Quality, Statistics & Reliability Section,

Local Arrangements Chair – 2006 ASQ Fall Technical Conference

Member of INFORMS, ASA, The Sierra Club, and MoveOn, Ford Motor Company Fellowship,

Edwin Pauly Merit Scholarship (UCLA), Physics Scholar Award (UCLA), Sigma Xi,

Active reviewer for: *Bioinformatics*, *IIE Transactions*, *Technometrics*, *JQT*, *IJQSR*, *QE*, and *CDSA*.

Graduated Thesis or Project Option Masters Students

1. Raqab, Alah (2014), “Gaining Monitoring Capabilities and Insights into Responses From Phishing Data.”
2. Zugeldar, Thomas (2012), “Lean Six Sigma Literature: A Review and Agenda for Future Research.”
3. Ravi Kanth Rachakonda (2009), “Crew Rostering Problem: A Random Key Genetic Algorithm with Local Search,” thesis.
4. Richards, Gavin (2005), “Bayesian regression diagnostics” project.
5. Zheng, Ning (2005), “Subset Selection and Optimization For Selecting Binomial Systems Applied to Supersaturated Design Generation” thesis.
6. Ahuja, Anita (2004), “Data Mining and OR Methods for Scheduling Jobs at a Fashion Distribution Center,” project.
7. Treaster, Allegra (2004), “New Methods for On-Line Experimentation Applied to Flux Core Arc Welders for Ship Panel Production,” thesis.
8. Kumar, Amarendra, “Graphical Comparison of Non-sequential Procedures for Response Surface Investigation,” Spring 2003 (thesis).
9. Ventakaraman, Karthik, “A Method for Robust Interface Design,” Winter 2003 (project).
10. Metha, Gautam, “An Application of Experimental Design to Optimize A Web Site,” Autumn 2002 (project).
11. Joshi, Chaitanya, “Modeling Six Sigma-Type Methodologies,” Autumn 2002 (project).
12. Chivate, Chetan, “Optimal Design of Focus Group Studies to Minimize Errors in Predicting Demand,” expected Summer 2002 (project).
13. Kusumakar, Hari, “Portfolio Selection Using Simulation Optimization,” Spring 2002 (project).
14. Schmidt, John, “The Sensitivity of Expected Prediction Accuracy to Assumptions,” Winter 2002 (project).
15. Padwal, Sachin, “Applying Experimental Design to Optimize Interface Usability of Statistics Software,” Winter 2001 (project).
16. Sharma, Deepak, “Optimal Experimental Design Applied to HVAC Case Joining Decision-Making,” Summer, 1999 (thesis).

Other Advised Students

Served as principle adviser for numerous project M.S. students. Served as graduate representative, committee, member and other similar functions for numerous students.

SPONSORED RESEARCH

Past and Current Projects (OSU Cost Share Not Included in the Award Amounts)

Data-Driven Cyber Vulnerability Maintenance

(\$516K over 3 years, NSF co-PIs Cathy Xia and Rajiv Ramnath)

Data-Driven Cyber Vulnerability Maintenance – Transition to Practice

(\$77K over 3 years, NSF co-PIs Cathy Xia and Rajiv Ramnath)

Scheduling Software and Methods for Injection Molding and Stamping

(\$75K over 1 year – tentatively approved)

Major Upgrade – Making SKO Faster Through Improved Core and New Methods

(\$24K for 1 year from Honda of America with 25% from the Honda Partnership, expected)

Software and Methods for Modeling Customer Decision-Making and Issues

(\$64K/year from the Nationwide Center for Advanced Customer Insights)

Further Extension of Honda of America Black Box Simulation Methods
(\$24,000 from Honda of America with 25% from the Honda Partnership)

Adding Optimization Functions to Simulation Software at Honda of America
(\$24,000 from Honda of America with 25% from the Honda Partnership)

Enhanced Design of Experiments Laboratories Using Blended Learning
(\$12,800 from the OSU College of Engineering)

Illustrating and Applying Simulation At Nestle
(\$65,000 from Nestle, Hagle is PI 2010-11)

Enhanced Simulation Laboratories Using Blended Learning
(\$11,800 from the OSU College of Engineering)

Multidisciplinary, Multi-Fidelity Analysis and Integration of Aerospace Vehicles
(\$36.7K for OSU from Near Inc. funded by AFOSR, 2009-2010)

Improving Honda of America Simulation Efficiency
(\$16.7K for OSU from Honda of America Inc., 2009-2009)

Make-Buy and Supply Chain Modeling for Furniture Makers
(\$54,661 for OSU from Feng Sheng International, 2006-2009)

Determining Appropriate Specifications for Welding Aluminum Tubes at USEC
(\$30K for OSU from the Edison Welding Institute)

The Development and Application of Advanced Design of Experiments Methods to More Effectively Bleach
Wood (~\$65K for OSU from Feng Sheng International, 2005-2006)

Fatigue Resistant, Energy Efficient (awarded but then the area dissolved, funding only partial and for the partners)
(\$0.9M with \$170K for OSU, Department of Energy thru Caterpillar, Co-PIs Farson, Richardson, 2003-2006)

Welding Process Modeling and Robust Design
(\$200K, The State of Ohio through the Edison Welding Institute, Farson is PI, 2003-2006)

6 σ TM Methods Development and Application to Welding Processes (CRP)
(\$209K over 3 years from the Edison Welding Institute, EWI, including \$45K at EWI, 2000-02)

Methods for Knowledge Based GMAW Parameter Optimization
(\$119K awarded much less received over 2 years from the Naval Joining Center, Richardson is PI, 2000-02)

Weld Sizing Technology for Arc Welding Production Robustness (CRP)
(\$10K over 1 year from EWI and \$150K at EWI, 2000-01)

Optimal Statistical Decision-Making for Welding Process Design – Continuation
(\$30K over 2 years from EWI, 1999-00)

Software for Design of Experiments and Optimization of Welding Processes
(\$11,051 over 2 years from EWI, 1999-01)

Statistical Process Control for Arc Welding of Tank Turrets
(\$2K over 1 year from EWI, 1999)

Regression and Neural Net Modeling for a Resistance Welding Application
(\$4K over 1 year from EWI, 1999)

Knowledge Based Welding Process Optimization
(\$77K over 1 year from EWI including \$67K at EWI, Yapp is Co-PI, 1998-99)

New Experimental Methods Applied to HVAC Case-Joining – Continuation
(\$30K over 1 year from Visteon Co. a subsidiary of Ford Motor Co., 1998-99)

Optimal Statistical Decision-Making for Welding Process and Production Systems Design
(\$16K over 1 year from EWI, 1998-99)

New Experimental Methods Applied to HVAC Case Joining
(\$35K over 1 year from Ford Motor Co., 1997-98)

Efficient Methods for Constructing KBS Inputs Applied to HVAC Odor Reduction
(\$28K over 1 year from Ford Motor Co., 1997-98)

Weld Process Optimization
(\$5K over 1 year from EWI, Profs. Richard Richardson and Gary Maul PI's, 1997-98)

Optimal Experimental Design for Arc Welding
(\$25K over 1 year from OSU Seed Grant, 1998-99)

Developing a Standard Test for Weld Cracking
(\$5K over 1 year from EWI, Lippold PI, 1998)

Interactive Web-based Software to Teach Experimental Data Analysis in Engineering Design
(\$1K over 1 year from OSU Faculty Innovator Grant, 1998-present)

Continuing Education for Industry

- Short Courses: Design of Experiments, one-day course for practicing engineers, sponsored by the Edison Welding Institute and the Society of Manufacturing Engineers, September, 1997.
Design of Experiments and Taguchi Methods, one day course for practicing engineers, sponsored by The Ohio State University, February 1998.

ORGANIZED SESSIONS

1. "Optimization and Modeling For Election Systems," INFORMS Conference (Invited) – Public Programs, Service and Needs Section, 2014.
2. "Optimization and Modeling for Individual Decision-Making," INFORMS Conference (Invited) – Social Media Analytics Section, 2014.
3. INFORMS Midwest Regional Conference (2011), Cluster Chair for Quality Statistics and Reliability, 5 sessions, 17 speakers.
4. "Optimal DOE in Computer Science and Bioinformatics," *INFORMS Conference*, Pittsburg, 2006.
5. "Quality Applications and Methods," *INFORMS Conference*, Pittsburg 2006.
6. "Experimentation for Profit," *INFORMS Conference*, San Jose, California, November 2002.
7. "FasterBetterCheaper Experimentation," *INFORMS Conference*, Miami, Florida, November 2001.
8. "Six Sigma Methods Development and Applications to Manufacturing Processes," *INFORMS Conference*, San Antonio, Texas, November 2000.
9. "Optimal Design of Experiments for and from Simulation Optimization," *INFORMS Conference*, San Antonio, Texas, November 2000.
10. "Recent Work in Experimental Design – Three Sessions," in collaboration with Bruce Ankenman (Northwestern University) and Kurt Palmer (USC), *INFORMS Conference*, Salt Lake City, Utah, May 2000.
11. "Simulation-Based Objectives for Optimal Experimental Design," *INFORMS Conference*, Cincinnati, Ohio, May 1999.
12. "Modeling Manufacturing Systems for Quality Improvement," *INFORMS Conference*, Cincinnati, Ohio, May 1999.

SELECTED PRESENTATIONS (WITH NO PROCEEDINGS)

1. Allen, T. T. and G. Herrin. "The Applicability of Commonly Used Experimental Designs," *INFORMS Conference*, Detroit, Michigan, 10/94.
2. Allen, Theodore T., "The Future of Optimal Experimental Design," *INFORMS Conference*, Seattle, Washington, 11/98.
3. Allen, T. T., "A New Look at Optimal Design of Experiments," *INFORMS Conference*, Cincinnati, Ohio, 5/99.
4. Yu, L. and T. T. Allen, "Low Cost Response Surface Methods," *The ASA Spring Research Conference*, 6/99.
5. Bernshteyn, M. and T. T. Allen, "Design of Experiments from the Stochastic Programming Point of View," *The ASA Spring Research Conference*, 6/99
6. Allen, T. T., "A New Look at Optimal Design of Experiments," *The ASA Spring Research Conference*, 6/99.
7. Allen, T. T., "Applications of Low Cost Response Surface Methods (LCRSM) and Stochastic Optimization for Robust Machine Design (RMD)," *INFORMS in Salt Lake City*, 5/00.
8. Ittiwattana, W. and T. T. Allen, "An Expert System to Support Statistics & Optimization Applications in Welding Process Design," *INFORMS in Salt Lake City*, 5/00.
9. Bernshteyn, M. and T. T. Allen, "Low Cost Alternatives to Simplex Designs Based on Stochastic Optimization of the EIMSE Objective," *INFORMS in Salt Lake City*, 5/00.

10. Brady, J. and T. T. Allen, "Optimal Tolerance Design of RF Circuits," *INFORMS in Salt Lake City*, 5/00.
11. Allen, T. T., "Roles for Simulation Optimization & Methods Development within the Six Sigma Framework," *INFORMS in San Antonio*, 11/00.
12. Ittiwattana, W. and T. T. Allen, "Robust Optimization to Achieve the Appropriate Sigma Level," *INFORMS in San Antonio*, 11/00.
13. Ribardo, C. and T. T. Allen, "Desirability-Based Methods that Address Process Variability and Methods Comparison for Arc Welding Parameter Optimization," *INFORMS in San Antonio*, 11/00.
14. Bernshteyn, M. and T. T. Allen, "Supersaturated Designs that Directly Maximize the Probability of Identifying Active Factors," *INFORMS in San Antonio*, 11/00.
15. Chantararat, N. and T. T. Allen, "Sequential Methods for Mixture Experiments With Process Variables," *INFORMS in Miami*, 11/01.
16. Schmitz, J., M. Bernshteyn, and T. T. Allen, "Sequential Methods for Mixture Experiments With Process Variables," *INFORMS in Miami*, 11/01.
17. Bernshteyn, M. and T. T. Allen, "Heuristics for Simulation Optimization: Methods and Review," *INFORMS in Miami*, 11/0.
18. Allen, T. T. and M. Bernshteyn, "A Comparison of Alternative Methods for Constructing Meta-Models for Computer Experiments," *INFORMS in Miami*, 11/01.
19. Allen, T. T., "The Foundations of Design of Experiments: A Review," *INFORMS Conference*, San Jose, California, 11/02.
20. Allen, T. T., "Roles for Simulation Optimization in the 'Next Generation' of Experimental Planning Techniques," Invited Session Sponsored By College of Simulation, *INFORMS Conference*, San Jose, California, 11/02.
21. Allen, T. T., "Design Issues in Split Plot Experimentation," *American Statistical Association Joint Statistical Meeting*, San Francisco, California - Invited Paper Presentation, 8/03.
22. Allen, T. T. and J. Brady, "Deriving DMAIC Using Markov Decision Processes," *ASQ Fall Technical Conference*, El Paso, Texas 10/03.
23. Chantararat, N., T. T. Allen, N. Zheng, "A New Class of Response Surface Designs for Systems Involving Quantitative and Qualitative Factors," *INFORMS Annual conference*, Atlanta, Georgia 10/03.
24. Allen, T. T., "New Practical Solution Methods, Objectives, and Fractional Factorials," *ASQ Fall Technical Conference*, Roanoke, Virginia 10/04.
25. Allen, T. T., M. Bernshteyn, and S. Hertzberg, "Optimally Allocating Voting Machines to Precincts In Future Presidential Elections," *INFORMS Invited Presentation*, San Francisco, 11/05.
26. Allen, T. T. and M. Megimose-McClay, "Improving the Hospital Discharge Process: A Case Study," *ASQ Fall Technical Conference*, Columbus, Ohio 10/06.
27. Huang, D., T. T. Allen, and R. E. West, "Artificial Intelligence and Algorithms to Optimize Expensive Black-Box Functions," *INFORMS Annual Meeting* 10/06.
28. Zheng, N. and T. T. Allen, "Fast Optimal DOE Using Search Engine Technology," *INFORMS Annual Meeting* 10/06.
29. Allen, T. T., M. Bernshteyn, S. Hertzberg, "High Quality Voting Machine Allocation Applied in Ohio," *INFORMS Annual Meeting* 10/06.
30. Brady, J., T. T. Allen, and J. Schenk, "Meso-Analysis Analysis of Six Sigma Projects and Resilience Modeling," *INFORMS Annual Meeting* 10/06.
31. Rajagopalan R. and T. T. Allen, "Multi-Fidelity Inverse Engineering With Nanotechnology and Other Applications," *INFORMS Annual Meeting* 10/06.
32. Ferhatosmanoglu, N. and T. T. Allen, "Optimal Design of cDNA Microarray Experiments," *INFORMS Annual Meeting* 10/06.
33. Taslim, C. and T. T. Allen, "Optimal Design of Experiments for System Identification Applied to Transcriptional Network Modeling," *INFORMS Annual Meeting* 10/06.

34. Tseng, S. and T. T. Allen, "Optimal Focus Group Design to Augment Demand Data," INFORMS Annual Meeting 10/06.
35. Schenk, J. and T. T. Allen, "Consequence-Likelihood Diagrams for After-Action Reporting of Incident Response," Invited IERC 2007 Presentation.
36. Allen, T. T. and J. Brady, "Meso-Analysis Analysis of Six Sigma Project Databases," Invited IERC 2007 Presentation.
37. Allen, T. T. and N. Zheng, "Process Control Using Free-Style Text and Topic Models," INFORMS speakers program, WINFORMS, Washington, D.C. 1/08.
38. Ferhatosmanoglu, N. and T. T. Allen, "Generalized A-Optimality and Hybrid Designs for Two-Color Microarrays," Invited presentation at the INFORMS Annual Meeting 2008.
39. Taslim, C. and T. T. Allen, "Optimally Designed Perturbations for Uncovering Genetic Networks and Inverse Estimation," Invited presentation at the INFORMS Annual Meeting 2008.
40. Ferhatosmanoglu, N. and T. T. Allen, "Discrete Choice Models for User-Centric Search Engines," Invited presentation at the INFORMS Annual Meeting 2008.
41. Tseng, S. and T. T. Allen, "A Simple Bayesian Regression Diagnostic to Account for Bias," Invited presentation at the INFORMS Annual Meeting 2008.
42. Rajagopalan, R. and T. T. Allen, "Physics-based Response Oriented Bayesian Empirical Surfaces," Invited presentation at the INFORMS Annual Meeting 2008.
43. Zheng, N. and T. T. Allen, "Topic Model Supervision Using Anti-Words," Invited presentation at the INFORMS Annual Meeting 2008.
44. Allen, T. T., M. Bernshhteyn, M. Damschroder, and K. Cotton, "Using Simulation to Determine the Number of Voting Machines in Franklin, Ohio," Invited presentation at the INFORMS Annual Meeting 2008.
45. Allen, T. T. (2009), "Exploratory Data Analysis at the Border Between Statistics and Optimization," *ASQ Fall Technical Conference*, Indianapolis, Indiana.
46. Allen, T. T. (2009), "Genetic Experimentation and Directed Bayes Modeling," Georgetown University Department of Biostatistics, Bioinformatics and Biomathematics.
47. Allen, T. T. (2010), "Pareto Charting Using Unsupervised, Freestyle Text Data and Bayesian Mixture Modeling," JRC 2010 at NIST.
48. Allen, T. T. (2010), "Human Assisted Modeling and SMERT Models with Applications in Text and Image Analysis" ISE Departmental Seminar.
49. Allen, T.T. and H. Xiong (2011), "SMERT Clustering Models Have Steering Wheels," Contributed Presentation, Amstat Spring Research Conference, Evanston, Illinois, June.
50. Afful-Dadzie, A. and T. T. Allen (2011), "Parallels Between Cyber Vulnerabilities and Attacks and Tool Degradation and Failure, Amstat Spring Research Conference, Evanston, Illinois, June.
51. Allen, T. T. (2011), "OR / Lean Six Sigma Applications for Process Design: Electronics, Health Care, and Food Production". Keynote Presentation, "Engineering Convergence Seminar" sponsored by the School of Industrial Engineering at UNIBE (Universidad Iberoamericana) in the Dominican Republic.
52. Lee, S. H. and T. T. Allen (2011), "Statistical Process Control Charting of Markov Chain Transition Probabilities with Applications for the Insurance Industry," Midwest INFORMS 2011, Columbus, Ohio August.
53. Xiong, H. and T. T. Allen, "Combining Subject Matter Expert Experimental Data with Standard Data in Bayesian Mixture Modeling with Applications In Quality Engineering," Midwest INFORMS 2011, Columbus, Ohio August.
54. Afful-Dadzie, A. and T. T. Allen (2011), "Simulation and Control Charting of Cyber Vulnerabilities and Attacks," Midwest INFORMS 2011, Columbus, Ohio August.
55. Artis, S., T. T. Allen, A. Afful-Dadzie, and Y. Allam (2011), "Results From a Randomized Experiment Involving Blended Learning Discrete Event Simulation Software," Midwest INFORMS 2011, Columbus, Ohio August.

56. Zugelder, T. and T. T. Allen (2011), "Lean Six Sigma Literature Review and Synthesis Revisited," Midwest INFORMS 2011, Columbus, Ohio August.