Cumulative Curriculum Vitae

I.   **Professional Background**

Name: James J. Swain

Rank and Year Appointed to that Rank: Professor, 2000

Year of Appointment to Graduate Faculty if applicable: Full Member, 1993

Department: Industrial and Systems Engineering, and Engineering Management

Office Address: Technology Hall TH N143A

Academic Specialties: Modeling and Simulation, Statistics, and Operations Research

Degrees:

Ph.D., 1982, Purdue University, Industrial Engineering Major, Statistics Minor, "Monte Carlo Estimation of the Sampling Distribution of Nonlinear Parameter Estimators."

MS, 1977, University of Notre Dame, Industrial Engineering Major, Mechanical Engineering Minor, "Efficient Strategies for Constrained Experimental Optimization."

BS Engineering, 1975, University of Notre Dame, Engineering Science Major, Systems Engineering Minor.

BA, 1974, University of Notre Dame, Liberal Arts Major, German Minor.

Academic experience:

1992 (Adjunct Asst. Professor): Georgia State University, School of Business, Atlanta, GA.
1990-1991 (Visiting Asst. Professor): University of Miami, School of Business, Coral Gables, FL.
1986 (Visiting Asst. Professor): Purdue University, Industrial Engineering, W. Lafayette, IN.
1982—90: (Asst. Professor): Georgia Institute of Technology, School of Industrial and Systems Engineering, Atlanta, GA.

II.   **Teaching Activities:**

Summary list of courses taught

ISE 340 Operations Research
ISE 390 Probability and Engineering Statistics I
ISE 391 Probability and Engineering Statistics II
ISE 426/526 Design of Experiments
ISE 447/547 Digital Simulation
ISE 647 Systems Simulation
ISE 690 Engineering Statistics
ISE 741 Advanced Quality (Response Surface Methodology)
ISE 790 Advanced Statistical Applications
ISE 739 ST: Mathematical Statistics
ISE 739 ST: Optimization Methods
ISE 739 ST: Cluster Analysis Techniques
ISYE 3029 Applications of Probability (Ga. Tech)

ISYE 3028, 3029 Engineering Statistics I, II (Ga. Tech)
ISYE 4039 Quality Control (Ga. Tech)
ISYE 4044 Simulation (Ga. Tech)
ISYE 4104/4105 ISyE Design I, II (Ga. Tech)
ISYE 4145 Simulation Applications (Ga. Tech)
ISYE 6401 Applied Regression Analysis I (Ga. Tech)
ISYE 6831 Advanced Simulation (Ga. Tech)

Dissertations Directed

Nitin Sharma, "Multi-objective Optimization using Evolutionary Algorithms for Geographical Zone Partitioning," (UAH 2011).
Michael Nix, "Development and Application of a Model for the Analysis of Trades between Space Launch System Operations and Acquisition Costs," (UAH, 2005).
Sampson E. Gholston, "An Interactive Multiple Objective Optimization Approach with Application to Hydrostatic Bearing Design." (UAH, 1999)
Hsin-Hung Wu, "Development of a Weighted Variance Approach to Modify Current Process Capability Indices." (UAH, 1998)
Cyndi Lovelace, "The Development of a Process Capability index for Non-Normal Processes Naturally Bounded at Zero." (UAH, 1994)
Laszlo Pallos, "Estimating Population Totals with Auxiliary Information with Applications to Electric Utility Load Research." (Ga. Tech, 1987)

Thesis Direction

Stephen Haff: "The Parametric Modeling of Deport Level Repair Costs for Military Helicopters" (UAH 2009)
Miguel Barrios: "The Value of Speed in Heavy Lift Rotary Wing Survivability" (UAH, 2009)
Nitin Sharma, "Simulation Optimization Using Simulated Annealing on a Network" (UAH, 2007)
Jeff Fults, "An Improved Method for Allocating Time Slots in a Joint Tactical Information Distribution System Network" (UAH, 1999)
Clay Olbon, II, "The Application of Fuzzy Logic to the Quality Function House of Quality," (UAH, 1995)
Troy Halverson, "An Improved Cross-Impact Model." (Ga. Tech, 1989)
Glenn Adelaar, "An Empirical Investigation of Nonlinear Least Squares Estimation with Correlated Errors," (Ga. Tech., 1986)

III.   Research, Creative, and Scholarly Activity:

- Books:

J. M. Charnes, D.M. Morrice, D. T. Brunner, and J. J. Swain, Eds., *Proceedings of the 1996 Winter Simulation Conference*, Coronado, California, 1996.

J. J. Swain, D. Goldsman, R. C. Crain, and J. R. Wilson, Eds., *Proceedings of the 1992 Winter Simulation Conference*, Washington, D. C., 1992.

W. E. Biles and J. J. Swain, *Optimization and Industrial Experiments*, John Wiley, New York, 1980.

- Book Chapters:

F. C. Wessling and J. J. Swain. "LoTEC Estimation," Chapter 20 in *Handbook of Heat Transfer Calculations*, McGraw-Hill, 2005.

J. J. Swain, "Nonlinear Regression," Chapter in *Handbook of Statistical Methods for Engineers and Physical Scientists*, McGraw-Hill, 2 Ed., (H. Wadsworth, Ed.). 1998.

 P.A. Farrington, J. J. Swain, and S.L. Messimer, "Systems Modeling and Simulation," Chapter in *Integrated Product, Process, and Enterprise Design*, (B. Wang, Ed.), Chapman and Hall, 1997.

 J. J. Swain, "Nonlinear Regression," Chapter in the *Handbook of Statistical Methods for Engineers and Physical Scientists*, McGraw-Hill, (H. Wadsworth, Ed.). 1990.

- Refereed Journal Articles:

Harris, G., Anderson, M.D., Farrington, P.A., Schoening, N.C., Swain, J.J., and Sharma, N., "Developing Freight Analysis Zones at a State Level: A Cluster Analysis Approach," Journal of the Transportation Research Forum 49(1), 59—68, 2010.

Lovelace, C. R., Swain, J.J., Zeinelabdan, H., and Gupta, J. "Lower Confidence Limits for Process Capability Indices Cp and Cpk when Data are Autocorrelated," Quality and Reliability Engineering International, 2009.

Lovelace, C. R., and Swain, J.J., "Process Capability Analysis Methodologies for Zero-Bound, Non-normal Process Data," *Quality Engineering*, April 2009, pp. 190-202.

Shatnawi, R., Li, W., Swain, J.J., and Newman, T., "Finding Software Metrics threshold Values Using ROC Curves," *Journal of Software Maintenance and Evolution: Research and Practice*, 2009.

P. J. Componation, D. R. Utley, and J. J. Swain, "Using Risk Reduction to Measure Team Performance," *Engineering Management Journal 13*(4), pp. 27—34, 2001.

H.-H. Wu, and J. J. Swain, `"A Monte Carlo Comparison of Capability Indices when Processes are Non-Normally Distributed," *Quality and Reliability Engineering International 17*, pp. 219—231, 2001.

H. H. Wu, J. J. Swain, P. A. Farrington, and S. L. Messimer, "A Weighted Variance Capability Index for General Non-Normal Processes," *Quality and Reliability Engineering International 15*, pp. 397—402, 1999.

 G. S. Tokol, D. Goldsman, and J. J. Swain, "Standardized Time Series L_p-Norm Variance Estimators for Simulations," *Management Science 44* (2), pp. 234-245, 1998.

 P. A. Farrington, J. J. Swain, J.L. Evans, and J.S. Rogers, "Developing Reusable Modeling Capabilities for Simulating High Volume Electronics Manufacturing Systems," *IEEE Transactions on Components, Packaging, and Manufacturing Technology, Part C* , Vol. 19(2), pp. 89--97, 1996.

 S. L. Messimer, J. J. Swain, P. A. Farrington, and J. L. Evans, "Industry/University Interaction for Simulation Based Process Improvement," *Journal of Technology Transfer 19* (3-4), pp. 87-99, December 1995.

 D. M. Goldsman, L. W. Schruben, and J. J. Swain, "Tests for Transient Means in Simulated Time Series," *Naval Research Logistics 41*, pp. 171--187, 1994.

 J. J. Swain, T. Halverson, F. A. Rossini, and A. L. Porter, "Markov Formulation of Cross-Impact Analysis for Impact Assessment and Forecasting," *Impact Assessment Bulletin 9* (3), 1991.

 L. L. Pallos, W. W. Hines, and J. J. Swain, "A Comparison of Strategies for Estimating Population Totals in Power Systems Load Research," *IIE Transactions 23* (1), pp. 51-71, 1991.

 B. Fox, D. M. Goldsman, and J. J. Swain, "Spaced Batch Means," *Operations Research Letters 10* (5), pp. 255-263, 1991.

J. J. Swain and D. M. Goldsman, "Moments of Second Order Polynomials with Applications to Simulation," *IIE Transactions 22* , pp. 168-171, 1990.

S. J. Deutsch, J. E. Richards, and J. J. Swain, "Effects of a Single Outlier on ARMA Identification," *Communications in Statistics: Theory and Methods A-19* (6), pp.2207--27, 1990.

J. J. Swain, and B. W. Schmeiser, "Monte Carlo Analysis of Nonlinear Statistical Models, I: Overview," *Communications in Statistics: Simulation and Computation B-18* (3), pp. 1101-1137, 1989.

J. J. Swain and B. W. Schmeiser, "Monte Carlo Analysis of Nonlinear Statistical Models, II: Raw Moments and Variances," *Journal of Statistical Computation and Simulation 30* , pp. 39-56, 1988.

J. J. Swain, "Monte Carlo Analysis of Nonlinear Statistical Models, IV: Nonnormal Errors," *Communications in Statistics, B: Simulation and Computation 17* (1), pp. 251-274, 1988.

J. J. Swain, S. Venkatraman, and J. R. Wilson, "Least-Squares Estimation of Distribution Functions in Johnson's Translation System," *Journal of Statistical Computation and Simulation 29*, pp. 271-297, 1988.

J. J. Swain and B. W. Schmeiser, "Monte Carlo Estimation of the Sampling Distribution of Nonlinear Model Parameter Estimators," *Annals of Operations Research 8*, pp. 245-256, 1987.

W. E. Biles and J. J. Swain, "`Mathematical Programming and the Optimization of Computer Simulations," *Mathematical Programming Studies 11*, M. Avriel and R. S. Dembo, Eds., North Holland, pp. 189-207, 1979.

J. M. Daschbach and J. J. Swain, "The Computer in Measuring Judicial Productivity," *Computers and Industrial Engineering 1* (4), pp. 263-271, 1977.

- Abstracts and Papers Delivered at Professional Meetings:

  Madewell, C. D., and J. J. Swain, "The Huntsville Simulation Snapshot: A Quantitative Analysis of what Employers Want Most in a Systems Simulation Professional," Proceedings of the Huntville Simulation Conference, October 2002, Huntsville, AL.

  "Evaluating Technology Impacts on Mission Success of Future Launch Vehicles," Proceedings of the 52nd International Astronautical Congress, October 1-5, 2001, Toulouse, France, (with A.W. Wilhite, S.E. Gholston, and J.J. Swain).

  Estremadoyro, D.N., P.A. Farrington, B.J. Schroer, and J.J. Swain, "Simulation of Memory Chip Line Using an Electronics Manufacturing Simulator," *Proceedings of the 1997 Winter Simulation Conference*, S. Andradottir, K.J. Healy, D.H. Withers, and B.L. Nelson, Eds., Atlanta, GA., pp. 1330--1337, 1997.

  Componation, P.J., D.R. Utley, and J.J. Swain, "A Cluster Analysis Approach to Support Team Structuring in Concurrent Engineering," *1997 Industrial Engineering Research Conference Proceedings*, G.L. Curry, B. Bidanda, and S. Jagdale, Eds., Miami Beach, FL, pp. 561--567, 1997.

  Schroer, B.J., P.A. Farrington, J.J. Swain, and D.R. Utley, "A Generic Simulator for Modeling Manufacturing Modules," *Proceedings of the 1996 Winter Simulation Conference*, J.M Charnes, D.J. Morrice, D.T. Brunner, and J.J. Swain, Eds., Coronado, CA., pp. 1155--1160, 1996.

  P. A. Farrington, J. S. Rogers, B. J. Schroer, J. J. Swain, J. L. Evans, and Y-C Feng, "Simulation Environment for Electronics Manufacturing," *Proceedings of the 1995 Winter Simulation Conference*, C. Alexopoulos, K. Kang, W. Lilegdon, and D. Goldsman, Eds., Washington, DC, pp. 917--24, 1995.

J. J. Swain and P. A. Farrington, "Designing Simulation Experiments for Evaluating Manufacturing Systems," *Proceedings of the 1994 Winter Simulation Conference*, J. D. Tew, M. S. Manivannan, A. F. Seila, and D. A. Sadowsky, Eds., Orlando, FL, 1994.

P. A. Farrington, B. J. Schroer, J. J. Swain, and Y. Feng, "Simulators as a Tool for Rapid Manufacturing Simulation," *Proceedings of the 1994 Winter Simulation Conference*, J. D. Tew, M. S. Manivannan, A. F. Seila, and D. A. Sadowsky, Eds., Orlando, FL, 1994.

P. A. Farrington and J. J. Swain, "Design of Simulation Experiments with Manufacturing Applications," *Proceedings of the 1993 Winter Simulation Conference*, G. W. Evans, M. Mollaghasemi, E. C. Russell, and W. E. Biles, Eds., Los Angeles, CA, 1993, 69--75.

D. Adelman, D. Goldsman, P. Auclair, and J. J. Swain, "Multinomial Selection Procedures for use in Simulations," *Proceedings of the 1993 Winter Simulation Conference*, G. W. Evans, M. Mollaghasemi, E. C. Russell, and W. E. Biles, Eds., Los Angeles, CA, 1993, 378--385.

D. Goldsman, J. J. Swain, and D. Withers, "Single-Replication Simulation," *Proceedings of the 1990 Winter Simulation Conference*, O. Balci, R. P. Sadowski, and R. E. Nance, Eds., New Orleans, LA, 1990, 387-391.

J. J. Swain, "Augmenting Linear Control Variates Using Transformations," *Proceedings of the 1989 Winter Simulation Conference*, E. A. MacNair, K. J. Musselman, and P. Heidelberger, Eds., Washington, DC, 1989, 455-458.

D. J. DeBrota, R. S. Dittus, S. D. Roberts, J. R. Wilson, J. J. Swain, and S. Venkatraman, "Modeling Input Processes with Johnson Distributions," *Proceedings of the 1989 Winter Simulation Conference,* E. A. MacNair, K. J. Musselman, P. Heidelberger, Eds., Washington, DC, 1989, 308-318.

R. H. Storer, J. J. Swain, S. Venkatraman, and J. R. Wilson, "Comparison of Methods for fitting Data Using Johnson Translation Distributions," *Proceedings of the 1988 Winter Simulation Conference*, San Diego, CA, 1988, 476-481.

D. J. Debrota, R. S. Dittus, S. D. Roberts, J. R. Wilson, J. J. Swain, and S. Venkatraman, "Input Modeling with the Johnson System of Distributions," *Proceedings of the 1988 Winter Simulation Conference*, San Diego, CA, pp. 165-179.

J. J. Swain, "A Control Variate Strategy for the Study of Nonlinear Model Parameter Estimators," *Proceedings of the Statistical Computing Section*, American Statistical Association, Washington, DC., pp. 160-165, 1986.

J. J. Swain and J. R. Wilson, "Fitting Johnson Distributions Using Least Squares: Simulation Applications," *Proceedings of the 1985 Winter SimulationConference*, San Francisco, CA, pp. 150-157, 1985.

J. J. Swain, "Control Variates in Nonlinear Regression*," Proceedings of the 1983 Winter SimulationConference*, Washington, DC., pp. 623-628, 1983.

W. E. Biles and J. J. Swain, "Optimization of Multiple-Response SimulationModels," *Proceedings of the 1977 Conference on Modeling and Simulation*, Pittsburgh, PA, 1977.

J. M. Daschbach, and J. J. Swain, "Managing the Courts for Productivity," *Proceedings of the 1977 AIIE National Meeting*, Dallas, TX, pp. 27-33, 1977.

W. E. Biles and J. J. Swain, "Strategies for Optimization of Multiple Response Simulation Models," *Proceedings of the 1977 Winter Simulation Conference*, Gaithersburg, MD, pp. 135-142, 1977.

- Other Publications:

  Swain, J. J., "Discrete Event Simulation Software Tools: A better reality", OR/MS Today 40(5), October 2013, pp. 48--59.

  Swain, J. J., "Statistical Software in the Age of the Geek," OR/MS Today 40(1), February 2013, pp. 56—61.

  Swain, J. J., "Discrete Event Simulation Software Tools: Back to the Future … ", OR/MS Today 38(5), October 2011.

  Swain, J.J., "Statistical Software Survey: Surrounded by Uncertainty", OR/MS Today, February 2011.

  Swain, J.J., "To Boldly Go… Discrete Event Simulation Software Tools," *OR/MS Today 35*(5), October 2009, 50—61.

  J. J. Swain, "Statistical Software Products Survey 2007: Pathfinder for an Uncertain World," *ORMS Today 34(1)*, February 2007, pp. 38-47.

  J. J. Swain, "Simulation Reloaded: Sixth Biennial Survey of Discrete-Event Simulation Software," *ORMS Today 30*(4), August 2003, pp. 46-49.

- Invited Colloquia, Seminars and Presentations:

  Research Grants and Contracts Received:

  "Evaluation of JACADS Projectile Downtimes and Uptimes for Trend Tendencies," (Joint PI with R.M. Wyskida and P.A. Farrington), Calibre Systems, $15,000, 1995.

  "Calibre Chemical Demilitarization Program Phases I--V," (Joint PI with R.M. Wyskida, P.A. Farrington, and J.D. Johannes), Calibre Systems, $140,000, 1995.

  "Calibre Compendium of Existing Simulation Tools," (Joint PI with R.M. Wyskida and P.A. Farrington) Calibre Systems, $20,000, 1995.

  "Bosch Data Collection and Model Development," (PI, with P.A. Farrington), Chrysler Huntsville Electronics Division, $19,961, 1995.

  "TEVES and EATX-III Lines Simulation," (with P.A. Farrington, PI, and S.L. Messimer) Chrysler Huntsville Electronics Division, $18,036, 1994.

  "Statistical Regression Models for the Prediction of Missile Peak External and Internal Temperatures," TMC/Redstone Arsenal, AL, $3,270, 1994.

  "TEVES Simulation Data Collection and Model Development," (PI; with P.A. Farrington and S.L. Messimer) Chrysler Huntsville Electronics Division, $26,870, 1994.

  "Strategy for Generic Simulation Model Development," (With P.A. Farrington, PI, and S.L. Messimer) Chrysler Huntsville Electronics Division, $25,035, 1994.

  "Industry/University Interaction for Simulation based Process Improvement in Electronics Manufacturing," (With P.A. Farrington, PI, S.L. Messimer, and J.L. Evans) National Science Foundation $75,000, 1993.

"Insulated Metal Substrate Research," (With P.A. Farrington, PI, and S.L. Messimer), Chrysler Huntsville Electronics Division, $24,000, 1993.

"Design of Experiments, MCM-L," (PI, with P.A. Farrington, and S.L. Messimer), Chrysler Huntsville Electronics Division, $18,000, 1993.

"Manufactured Process Analysis," (PI, with P.A. Farrington, and S.L. Messimer), Chrysler Huntsville Electronics Division, $44,500, 1993.

"Choosing the Best Simulated System, with Applications to Manufacturing," (Co-PI with D. Goldsman) National Science Foundation, $130,000, 1990-1992.

 One Run Simulation," (Co-PI with D. Goldsman) IBM Research Grant, $43,807, 1989.

"Control Variate Methodology Applied to Nonlinear Regression with General Error Distribution," New Faculty Research Initiation Grant, National Science Foundation, $10,000, 1982.

IV.   Service Activities (include service to institution, profession, discipline, other):

American Statistical Association representative to the Board of the Winter Simulation Conference (1993--). Secretary to Board, 1999; Vice-Chair of Board, 2000; Chair of Board, 2001.

Editor, *Proceedings of the 1992 Winter Simulation Conference*, **Washington, DC**

TIMS College on Simulation *Newsletter***, 1988-1990 (Co-Editor), 1990-1992 (Editor)**

Program Chair 1996 Winter Simulation Conference, San Diego, CA.

Associate Editor, *Journal of Statistical Computation and Simulation* **(1990-93)**

Reviewer	**National Science Foundation**
Referee	**IIE Transactions, Technometrics,**
	Operations Research, Management Science,
	IEEE Systems,~Man,~and~Cybernetics,
	American Journal of Mathematical and Management Sciences,,
	The International Journal of Mathematics and Mathematical Science,
	Annals of Operations Research, Forest Science
	Simulation Transactions

Book / Software Reviews:
   Industrial Engineering
   European Journal of Operational Research
   OR/MS Today
   Journal of Quality Technology

Sessions Organized/Chaired

"Statistical Simulation," 1987 Winter Simulation Conference,
Atlanta, GA, December 1987.

"Distribution Fitting for Simulation, 1988 Spring ORSA/TIMS National
Meeting, Washington, D C., 25 April 1988

"Simulation Output Analysis," 1990 Spring ORSA/TIMS National Meeting,
Las Vegas, NV, 7 May 1990

"Introductory Tutorials" Track Coordinator, 1993 Winter Simulation

Conference, Los Angeles, CA, 12-15 December 1993

Exhibits Chair 1987 Winter Simulation Conference, Atlanta, GA, December 1987

Member
> **American Statistical Association (1980--)**
> **Institute for Industrial Engineering, Senior Member (1980--)**
> **Institute for Operations Research and Management Science (1980--)**
> **Society for Computer Simulation (1978--1990)**
> **American Society for Engineering Education (1980--92, 1999--)**
> **American Society for Engineering Management (1999—2007)**

President (2009-2010), Vice President (2008-2009), UAH Chapter Phi Kappa Phi

Faculty Senate (1996-2000). Chair, Senate Faculty and Student Development Committee (1997-2000)

ISEEM Admissions Committee (1997---)

Chair, College of Engineering Curriculum Committee (1997-1999), Member (1996--1997, 1999-2011)

College of Engineering Research Committee (1993--96)

University Convocation Committee (1992--95)

Alternate Member, University Graduate Council (1994--1996)

School of ISyE Graduate Committee (1984--1986)

School of ISyE Undergraduate Committee (1987--1989)

Member of Dean's Ad hoc Committee on Freshman Computing, (1987-1989)

V.   Honors, Awards, and Special Recognitions:

David Ross Grant for Dissertation Research, Purdue University, 1980-1981

Magoon Outstanding Graduate Instructor Award, Purdue University, 1980