
Joseph A. Donndelinger

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EMPLOYMENT HISTORY**General Motors LLC, Warren, MI (Jun 2000 - Present)**

Aug 2014 - Present Staff Researcher, Safety Analytics, Operations Research
May 2012 - Jul 2014 Staff Researcher, Advanced Quality Analytics, Vehicle Systems Research
Aug 2002 - Apr 2012 Staff Researcher, Customer Driven Quality, Vehicle Systems Research
Jun 2000 - Jul 2002 Senior Researcher, Customer Driven Quality, Vehicle Systems Research

Ford Motor Company, Dearborn, MI (Feb 1994 - May 2000)

Sep 1999 - May 2000 Product Engineer, Frame and Fuel Systems Engineering, Truck Vehicle Center
Jan 1999 - Aug 1999 Product Engineer, Vehicle Systems Engineering, Small Car Vehicle Center
Jan 1998 - Dec 1998 Product Engineer, Vehicle CAE Integration, Advanced Vehicle Technology
Apr 1996 - Dec 1997 Product Engineer, Core Vehicle Integration, Advanced Vehicle Technology
Oct 1995 - Mar 1996 Operations Engineer, Material Control, Wayne Assembly
Feb 1994 - Sep 1995 Product Engineer, Value Management, Advanced Vehicle Technology
May 1993 - Aug 1993 Intern—Energy Analysis, Advanced Vehicle Systems Engineering

Onsrud Cutter Inc., Libertyville IL (Summers 1989 - 1991)

May 1991 - Aug 1991 Engineering Intern
May 1990 - Aug 1990 CNC Machine Operator
May 1989 - Aug 1989 Machine Operator

EDUCATION

1997 M.S., Industrial Engineering, University of Illinois Urbana—Champaign
1992 B.S., Mechanical Engineering, University of Illinois Urbana—Champaign

ACADEMIC APPOINTMENTS**University of Illinois, Urbana—Champaign (Jan 1992 - Jan 1994)**

Spring 1993 - Fall 1993 Teaching Assistant
Spring 1992 - Fall 1993 Research Assistant
Fall 1990 - Fall 1991 Undergraduate Grader

PROFESSIONAL TRAINING

Dec 2015	Design for Six Sigma Black Belt (GM Certification)
Dec 2013	Design for Six Sigma Green Belt (GM Certification)
Dec 2012	Introduction to Design Review Based on Failure Modes, Society of Automotive Engineers Professional Development Program
Jan 2009	China Cross-Cultural Training, People Going Global
Jun 2007	Individual Choice Behavior: Theory and Application of Discrete Choice Analysis, MIT Professional Institute
Feb 2005	India Cross-Cultural Training, People Going Global
Jun 2002	Foundations of Professional Decision Analysis, Strategic Decisions Group
Oct 2000	Five-Day Aircraft Design Short Course by Daniel Raymer, sponsored by General Motors
Aug 1999	Three-Day High Performance Driving Course, Bondurant School of High Performance Driving
Feb 1995	Value Analysis, Society of Automotive Engineers Professional Development Program
Aug 1993	The New Economic Age by W. Edwards Deming, sponsored by Ford Motor Company

AWARDS and HONORS

2013	“BOSS” Kettering Award “Complexity Reduction, Content Packaging and Price Optimization,” General Motors LLC
2004	Selected for National Science Foundation <i>Engineering Design in 2030 Workshop</i>
2002	Selected for National Academy of Engineering <i>Frontiers of Engineering Symposium</i>
2001	Selected for National Science Foundation <i>Workshop in Decisions and Engineering</i>
1997	Arch T. Colwell Award for Outstanding Technical Paper, <i>SAE International Congress and Exposition</i>
1992	T. A. Peebles Award, University of Illinois Urbana–Champaign Dept. of Mechanical and Industrial Engineering

PROFESSIONAL MEMBERSHIPS and AFFILIATIONS

2012 - present	American Society for Quality
2000 - 2012	American Society of Mechanical Engineers

REVIEWER FOR

Journals

Artificial Intelligence for Engineering Design, Analysis, and Manufacturing
ASME Journal of Mechanical Design
AIAA Journal
International Journal of Technology Management

National Science Foundation Panels

Engineering Design
Cyberphysical Systems

Conferences

2009 - 2015	International Conference on Engineering Design
2001 - 2015	ASME Design Theory and Methodology Conference
2005 - 2015	ASME Design Automation Conference
2007 - 2012	ASME Computers and Information in Engineering Conference
2013	ASME Design Education Conference
2006 - 2012	AIAA Multidisciplinary Analysis and Optimization Conference
2001 - 2002	SAE International Body Engineering Conference & Exhibition

PROFESSIONAL SERVICE

Advisory Boards

2008 - 2009	Industrial Advisory Board Member: Missouri University of Science & Technology Interdisciplinary Engineering Dept.
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Personnel Search

2004 - 2012	GM Research & Development Functional Recruiting Leader: Missouri University of Science & Technology / University of Missouri - Rolla
2002 - 2004	GM Research & Development Functional Recruiting Leader: University of Illinois Urbana-Champaign

Conference Organizing

2011	Team Leader and Poster Session Contributor: National Science Foundation <i>Design Frontiers Symposium</i>
2006 - 2008	Industry Liaison: ASME Design Automation Executive Committee
2008	Panel Session Organizer: ASME Computers and Information in Engineering Conference
2007 - 2008	Panel Session Organizer: ASME Design Automation Conference
2004 - 2012	Review Coordinator and Session Chair: ASME Design Automation Conference
2006	Review Coordinator and Session Chair: ASME Design Theory and Methodology Conference

COURSES DEVELOPED

Systems Engineering Fundamentals

This 8-hour instructor-led course provides an overview of the system engineering techniques required for producing Feature and System Technical Specifications. It includes instruction and exercises on creating use cases and functional models and on writing requirements. It also describes the System Safety process as it pertains to the System Engineering process.

DFMEA Status Dashboard User Training

This self-guided course covers operation of the DFMEA Status Dashboard, an application developed to monitor the completion status of Design Failure Modes and Effects Analyses relative to an established vehicle program plan. Topics covered include program plan development, upload of DFMEA documents, generating completion reports and performing vehicle program risk assessments.

DFMEA Research Dashboard User Training

This self-guided course covers operation of the DFMEA Research utilities included in the Integrated Advanced Quality Analytics tool suite. Topics covered include querying data from warranty and engineering issue tracking systems, deriving ontologies from Functional Models for text mining, generating reports and applying results within the context of the SAE J1739 standard for Design Failure Modes and Effects Analysis.

SUMMER INTERNS SUPERVISED

General Motors

15. May 2014 - Jun 2014 Jeremy Rhodes, James Madison University
14. May 2014 - Aug 2014
May 2013 - Aug 2013 Ryan King, North Carolina St. University
13. May 2011 - Aug 2011 Callaway Turner, North Carolina St. University
12. Jun 2011 - Sep 2011 Wei Xie, Northwestern University
11. Sep 2011 - Nov 2011 Daria Shalygina, Saint Petersburg State University
10. Sep 2010 - Nov 2011 Natalia Tsarakova, Saint Petersburg State University
9. May 2008 - Aug 2008
May 2007 - Aug 2007 Robert Nagel, Missouri University of Science and Technology
8. May 2005 - Aug 2005 Luke Wissmann, University of Illinois Urbana–Champaign
7. May 2005 - Aug 2005 Cari Arnold-Bryant, Missouri University of Science and Technology
6. May 2004 - Aug 2004
May 2003 - Aug 2003
May 2002 - Aug 2002 Scott Ferguson, University at Buffalo – State University of New York
5. May 2003 - Aug 2003 Ryan Hutcheson, Missouri University of Science and Technology
4. May 2001 - Aug 2001 Alberto Cividanes, Massachusetts Institute of Technology

Ford Motor Company

3. May 1997 - Aug 1997
May 1996 - Aug 1996 Elizabeth Cowan, University of Illinois Urbana–Champaign
2. May 1995 - Aug 1995 Hussein Ali, University of Illinois Urbana–Champaign
1. May 1994 - Aug 1994 Rebecca Silver, University of Illinois Urbana–Champaign

STUDENTS CO-ADVISED ON COLLABORATIVE PROJECTS

8. May 2014 - Jun 2014 Jeremy Rhodes, James Madison University
7. Aug 2012 - Aug 2014 Garrett Foster, North Carolina State University
6. Aug 2010 - May 2012 Eric Sullivan, North Carolina State University
5. Aug 2005 - May 2009 Sina Ghotbi, University of Illinois Chicago
4. Jan 2003 - Sep 2003 Christopher Han, Stanford University
3. Jan 2003 - Jun 2004 Matt Bohm, Missouri University of Science & Technology
2. Jan 2003 - May 2004 Ashwin Gurnani, University at Buffalo – State University of New York
1. Jan 2002 - Jun 2002 John Feland, Stanford University

CAPSTONE DESIGN TEAMS CO-ADVISED

James Madison University, August 2013-May 2015:

Meghan Daly, Fletcher Grow, Mackenzie Peterson, Jeremy Rhodes

RESEARCH FUNDING

Government Funding (\$248,588 total)

NSF-CMMI-0969961, "GOALI: A Multidisciplinary Approach to Simultaneous Market Segmentation and Product Family Definition," with PI Scott Ferguson, May 2010-Apr 2013.

GM Internal Funding (\$1,029,811 total)

17. Oct 2013 - May 2015 Implementing a Product Failure Knowledge Management System, \$14,000 for collaborative work with Dr. Robert Nagel at James Madison University
16. May 2013 - Aug 2013 A Multidisciplinary Approach to Simultaneous Market Segmentation and Product Family Definition, \$10,560 supplemental funding for collaborative work with Prof. Scott Ferguson at North Carolina State University
15. Apr 2013 - Sep 2014 Applying Customer Perception of Function and Failure to Strengthen Root Cause Analysis, \$30,982 for collaborative work with Dr. Robert Nagel at James Madison University
14. Jan 2011 - Dec 2014 Design and Implementation of Social Network for Chinese Vehicle Consumers, \$150,000 for collaborative work with Drs. Eric Bradlow and Peter Fader at University of Pennsylvania Wharton School of Business
13. Jan 2011 - Dec 2011 Expanding an Online Community for Chinese Vehicle Consumers to Multiple Sites with Mobile Devices, \$40,000 for collaborative work with Dr. Peifa Jia at Tsinghua University Institute for Internet Behavior
12. Sep 2010 - Dec 2010 Modeling of Stated and Observed Consumer Purchase Behavior, \$4,485 for collaborative work with Dr. Kirill Borisov at Saint-Petersburg State University
11. Jun 2010 - Dec 2011 Consumer Data Collection for Predicting Consumers' Consideration Sets and Preferences by Combining Sparse and Full Self-Explicated Data, \$60,000 for collaborative work with Dr. Meng Su at Peking University

10. May 2010 - Aug 2014 A Multidisciplinary Approach to Simultaneous Market Segmentation and Product Family Definition, \$40,000 supplemental funding for collaborative work with Prof. Scott Ferguson at North Carolina State University
9. Jan 2010 - Dec 2010 Design and Implementation of Social Network for Chinese Vehicle Consumers, \$40,000 for collaborative work with Dr. Peifa Jia at Tsinghua University Institute for Internet Behavior
8. Nov 2009 - Aug 2013 Predicting Consumers' Consideration Sets and Preferences by Combining Sparse and Full Self-Explicated Data: An Empirical Study for Chinese New Vehicle Markets, \$100,000 for collaborative work with Dr. Meng Su at Peking University
7. Sep 2006 - Dec 2007 Architecting Design Repositories: Product Modeling, Exchange, and Reuse, \$40,000 for collaborative work with Profs. Daniel McAdams and Robert Stone at Missouri University of Science & Technology
6. Aug 2005 - May 2006 Research on Incorporating Uncertainty When Using AHP in Customer Surveys and Hierarchical Engineering Decision Making, \$100,345 for collaborative work with Dr. Michael Scott at University of Illinois Chicago
5. May 2005 - Dec 2005 Research on the Properties of Analytic Market Simulation Models, \$16,819 for collaborative work with Dr. Ali Yassine at University of Illinois Urbana-Champaign
4. Aug 2004 - Nov 2004 Vehicle Integration Customer to Requirements Optimization System, \$30,024 for software development with Phoenix Integration and TechnoSoft
3. Jan 2003 - Jun 2004 Functional Model Representation for Vehicle Bill of Material Definition, \$143,142 for collaborative work with Drs. Daniel McAdams and Robert Stone at Missouri University of Science & Technology
2. Jan 2003 - May 2004 Feasibility Assessment in Vehicle Performance and Design, \$109,454 for collaborative work with Dr. Kemper Lewis at University at Buffalo – State University of New York
1. Jan 2002 - Dec 2003 A Decision Analytic Approach to Vehicle Development: Evolutionary Improvement of General Motors' Work System, \$100,000 for collaborative work with Dr. Ronald Howard within a \$3,000,000 General Motors-Stanford University Collaborative Research Laboratory

PATENTS

5. General Motors Tool-Method Invention, 2015
4. "Methods for Applying Text Mining to Identify and Visualize Interactions With Complex Systems," Application Filed Dec 2014
3. "Function-Based Method For Classifying and Fusing System Behavior Information In Product Development," Application Filed Nov 2014
2. "Augmentation of DFMEAs With Field Data Using NLP and Statistical Techniques," Application Filed Jun 2013
1. General Motors Tool-Method Invention, 2012

BOOK CHAPTERS

3. **Donndelinger, J.**, Cafeo, J., and Nagel, R. "A Study of Simulated Decision-Making in Preliminary Vehicle Design," *Product Research: The Art and Science Behind Successful Product Launches*, Chapter 6, pp. 113-134, Springer, 2009
2. **Donndelinger, J.** "A Decision-Based Perspective on the Vehicle Development Process," *Decision Making in Engineering Design*, Chapter 19, pp. 217-225, ASME Press, 2006
1. Cafeo, J., **Donndelinger, J.**, Lust, R., and Mourelatos, Z. "The Need for Non-Deterministic Approaches in Automotive Design: A Business Perspective," *Engineering Design Reliability Handbook*, Chapter 5, CRC Press, 2004

JOURNAL PUBLICATIONS

4. Turner, C., Foster, G., Ferguson, S., **Donndelinger, J.**, "Creating Targeted Initial Populations for Genetic Product Searches in Heterogeneous Markets," *Engineering Optimization*, 46(12): 1729-1747, 2014
3. Stump, G., Lego, S., Yukish, M., Simpson, T., and **Donndelinger, J.** "Visual Steering Commands for Trade Space Exploration: User-Guided Sampling With Example," *Journal of Computing and Information Science in Engineering - JCISE*, 9(4), 2009
2. Gurnani, A., Ferguson, S., Lewis, K. and **Donndelinger, J.**, "A Constraint-Based Approach to Feasibility Assessment in Preliminary Design," *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing*, (20)351-367, Cambridge University Press, 2006
1. Ferguson, S., Gurnani, A., **Donndelinger, J.**, and Lewis, K., "A Study of Convergence and Mapping in Preliminary Vehicle Design Problems," *International Journal of Vehicle Systems Modeling and Testing*, 1(1):192-215, 2005

PEER REVIEWED CONFERENCE PUBLICATIONS

21. Ferguson, S., Turner, C., **Donndelinger, J.**, and Beltramo, M. "Creating Targeted Initial Populations for Genetic Product Searches," Sawtooth Software User's Conference, Orlando, FL, 2012
20. Sullivan, E., Ferguson, S., and **Donndelinger, J.** "Exploring Differences in Preference Heterogeneity Representation and Their Influence in Product Family Design," 37th ASME Design Automation Conference, Washington, DC., 2011
19. Turner, C., Ferguson, S., and **Donndelinger, J.** "Exploring Heterogeneity of Customer Preference to Balance Commonality and Market Coverage," 37th ASME Design Automation Conference, Washington, DC., 2011
18. Su, M., Jin, Y., Chen, Y., **Donndelinger, J.**, and Tu, J., "Consumer Knowledge and Intention-Behavior Discrepancy," China-India Consumer Insight Conference, Beijing, China, 2010
17. **Donndelinger, J.** "Deploying Alternative Design Representations to Vehicle Development Teams: A Sociological Perspective," 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Fort Worth, TX, 2010
16. Ferguson, S. and **Donndelinger, J.** "A Multidisciplinary Approach to Market Segmentation and Product Family Definition," 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Fort Worth, TX, 2010
15. Ghotbi, S., Scott, M., and **Donndelinger, J.**, "Assessing Fusibility in Enrichment Methods for Disparate Customer Data Sets," 35th ASME Design Automation Conference, San Diego, CA, 2009

14. **Donndelinger, J.**, Robinson, J., and Wissmann, L. "Choice Model Specification in Market-Based Engineering Design," 34th ASME Design Automation Conference, Brooklyn, NY, 2008
13. Nagel, R., Hutcheson, R., Stone, R., McAdams, D. and **Donndelinger, J.** "Function Design Framework: Integrated Process and Function Modeling for Complex System Design," 20th ASME Design Theory and Methodology Conference, Brooklyn, NY, 2008
12. Wissmann, L. and **Donndelinger, J.** "Establishing Correspondence Between Value Functions Used in Market-Based Engineering Design," 34th ASME Design Automation Conference, Brooklyn, NY, 2008
11. Stump, G., Lego, S., Yukish, M., Simpson, T., and **Donndelinger, J.** "Visual Steering Commands for Trade Space Exploration: User-Guided Sampling with Example," 33rd ASME Design Automation Conference, Las Vegas, NV, 2007
10. **Donndelinger, J.**, Ferguson, S., and Lewis, K., "Exploring Mass Trade-Offs In Preliminary Vehicle Design Using Pareto Sets," 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Portsmouth, VA, 2006
9. Ferguson, S., Lewis, K. and **Donndelinger, J.** "Optimization of Vehicles and Platforms Through Engineering and Marketing Integration," 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Portsmouth, VA, 2006
8. Gu, X., Fenyes, P. and **Donndelinger, J.** "Comparison of Performance Trade-Off Evaluations for Conceptual Vehicle Design Using Different Levels of Approximation in IFAD," 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Portsmouth, VA, 2006
7. Hutcheson, R., McAdams, D., Stone, R., and **Donndelinger, J.**, "A Function-Based Method for Addressing Uncertainty During the Design of Engineering Systems," 17th ASME Design Theory and Methodology Conference, Long Beach, CA, 2005
6. Gurnani, A., Ferguson, S., **Donndelinger, J.**, and Lewis, K. "Feasibility Assessment in Preliminary Design Using Pareto Sets," 31st ASME Design Automation Conference, Long Beach, CA, 2005
5. Ferguson, S., Gurnani, A., **Donndelinger, J.**, and Lewis, K. "A Study of Convergence and Mapping in Multiobjective Optimization Problems," 25th ASME Computers and Information in Engineering Conference, Long Beach, CA, 2005
4. **Donndelinger, J.** and Fenyes, P., "Application of Math-Based Marketing and Financial Tools in an Automated Conceptual Design Framework," 30th ASME Design Automation Conference, Salt Lake City, UT, 2004
3. Hutcheson, R., McAdams, D., **Donndelinger, J.**, and Stone, R. "Applying Functional Modeling as a Unifying Basis for Design for Six Sigma Execution," ASME International Mechanical Engineering Conference and Exposition, Anaheim, CA, 2004
2. Fenyes, P., **Donndelinger, J.**, and Bourassa, J.-F., "A new system for multidisciplinary design and optimization of vehicle architectures," 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, 2002
1. **Donndelinger, J.** and Cook, H., "Methods for Analyzing the Value of Automobiles," SAE International Congress and Exposition, Detroit, MI, 1997

PANEL SESSIONS

6. "Integrated Systems Engineering," ASME Computers and Information in Engineering Conference, Sep 2007
5. "Accomplishments, Status, and Future Needs: From Industry's Perspective," ASME Design Automation Conference, Sep 2006
4. "Focused Workshop on Uncertainty Management in Engineering Design," California Institute of Technology Center for Integrative Multiscale Modeling and Simulation, May 2002
3. "12th Decision-Based Design Workshop," ASME International Design Engineering Technical Conferences, Sep 2001
2. "11th Decision-Based Design Workshop," National Science Foundation Grantee's Conference, Jan 2001
1. "Recent Trends for Customer Input into Value Studies," Society of American Value Engineers Annual Conference, May 1997

INVITED PRESENTATIONS

14. "How the Rubber Meets the Road: Vehicle Development at General Motors," James Madison University, Nov 2013
13. "A Social-Scientific Perspective on Interpretation of Vehicle Design Information," GM R&D India Science Lab Workshop on the Art and Science of Product Development, Bangalore, India, Nov 2010
12. "Applying Models of Customer Choice for Market-Based Engineering Design," North Carolina State University Dept. of Mechanical and Aerospace Engineering, Oct 2010
11. "Applying Models of Customer Choice for Market-Based Engineering Design," Texas A&M University Dept. of Engineering Technology & Industrial Distribution, Sep 2010
10. "Applying Models of Customer Choice for Market-Based Engineering Design," Oakland University School of Business Administration, Jan 2010
9. "Information Flow and Decision-Making in Advanced Vehicle Development," University of Missouri-Rolla Dept. of Engineering Management, Sep 2007
8. "Information Flow and Decision-Making in Advanced Vehicle Development," University at Buffalo – State University of New York Dept. of Mechanical and Aerospace Engineering, Sep 2006
7. "Information Flow and Decision-Making in Advanced Vehicle Development," Wayne State University Product Development & Systems Engineering Consortium, Feb 2006
6. "Information Flow and Decision-Making in Advanced Vehicle Development," University of Illinois Dept. of Industrial and Entrepreneurial Systems Engineering, Apr 2005
5. "Design for Six Sigma: Friend or Foe to Creativity?" International Institute for Research Design for Six Sigma Symposium, Jul 2005
4. "Information Flow and Decision-Making in Advanced Vehicle Development," University, of Michigan Project Antillium, Jan 2005
3. "Information Flow and Decision-Making in Advanced Vehicle Development," University of Maryland Institute for Systems Research, Apr 2004
2. "Automotive Research: Technical Trends and Challenges," National Science Foundation Engineering Design in 2030 Workshop, Apr 2004
1. "Using the Design Structure Matrix to Model an Early Vehicle Development Process," MIT Center for Innovation in Product Development, Nov 2001