

**DATE:** November 12, 2020

**DEPARTMENT:** Mechanical Engineering

**A. Identifying Data**

Name: Erin F. MacDonald  
Current Rank: Assistant Professor  
Proposed Rank: Appointment as Associate Professor

**B. Academic History**

2008	PhD Mechanical Engineering	The University of Michigan, Ann Arbor, MI
2004	MS Mechanical Engineering	The University of Michigan, Ann Arbor, MI
1998	BS Materials Science and Engineering	Brown University, Providence, RI

**C. Employment Record**

08/2014 – Present	Assistant Professor, Department of Mechanical Engineering Stanford University, Stanford, CA
06/2009 – 07/2014	Assistant Professor, Department of Mechanical Engineering Iowa State University, Ames, IA  Courtesy appointment, College of Design Iowa State University, Ames, IA  Associate Ames National Laboratory, Ames, IA
01/2009 – 05/2009	Instructor, Department of Mechanical Engineering Massachusetts Institute of Technology, Cambridge, MA
08/2008 – 05/2009	Postdoctoral Associate, Sloan School of Management Massachusetts Institute of Technology, Cambridge, MA
03/2000 – 05/2002	Assistant Product Development Manager Sierra Designs, Emeryville, CA
11/1999 – 03/2000	Customer Design Business Owner Oakland, CA
10/1998 – 10/1999	Business Analyst Mitchell Madison Group, San Francisco, CA

## **D. Professional Activities**

### Conference Session Chair/Co-Chair/Organizer

1. Session Co-chair, “Design and Optimization of Sustainable Energy Systems,” ASME International Design Engineering Technical Conference, Design Automation Committee, Various Years, 2010 – Present
2. Session Co-Chair, Various Human-centered Design Sessions, ASME International Design Engineering Technical Conference, Design Theory and Methodology Committee, Various Years, 2010 – Present
3. Session Co-Chair, “Consideration and Strategy,” INFORMS Marketing Science Conference, Atlanta, GA, 2014

### Academic Advisory Boards

1. Brown Design Workshop Advisory Board, Brown University, 2015 – 2018
2. Integrated Design Innovation (IDI) Program Consortium, 2017 – 2019

### Research Advisory Boards

1. Scientific Advisory Board, DESIGN, an international design conference, 2014
2. Scientific Committee Member, International Conference on Engineering Design (ICED), 2013, 2017, 2019

### Workshop Organizer

1. Journey Mapping and Design Workshop, Toyota Mobility Foundation, São Paulo, Brazil, March 20–22, 2019.
2. Wearable Design Workshop, for eWEAR, Stanford Wearable Electronics Initiative affiliates program, Stanford, February 27, 2018.
3. Redesigning the Design Master’s at Stanford, see Item E(5), Stanford, March 14–15, 2017.
4. Redesigning the Design Master’s at Stanford, see Item E(6), Stanford, December 7, 2016.
5. Co-Organizer, Workshop on Complex Consumer Choice and Transportation Energy Policy, Ann Arbor, Michigan, September 28–30, 2014. Funded by the National Science Foundation (NSF). Workshop advisory board included representatives from Toyota Motor North America, US Environmental Protection Agency, US Volpe National Transportation Systems Center, Max Planck Institute, Booz Allen Hamilton, Carnegie Mellon University, University of Michigan, and The RAND Corporation.

### Workshop Participant

1. Invited participant, *Nature Sustainability* Expert Panel on Behavioral Science for Design, New York, NY, January 14, 2019.
2. Invited participant, NSF Workshop on Adaptive Human-Centered Engineered Systems, Washington, DC, February 22, 2016.
3. Invited participant, Epicenter Research Summit on Entrepreneurship Education, Stanford, CA, August 4–5, 2014.

4. Invited participant, Department of Energy Workshop on Assessing the Social Acceptability of Bioenergy, Washington, DC, April 24, 2012.
5. Invited participant, NSF Workshop Series on Graduate Design Education, Chicago, IL, and Ann Arbor, MI, multiple workshops, 2008 – 2011.
6. Invited participant, NSF Workshop on Managing Graduate Research Groups, Virginia Polytechnic Institute and State University, Blacksburg, VA, July 11–12, 2011.
7. Invited participant, NSF Workshop on Design Methods for Sustainability, Montreal, Canada, August 15, 2010.

#### Professional Affiliations

1. American Society of Mechanical Engineers
2. The Design Society

### **E. University and Department Service**

#### Lead Organizer, Design Impact Master's of Engineering Degree, 2015 – 2019

Led the redesign effort of the MS Product Design degree to a new degree, The Stanford Design Impact Engineering Master's Degree (refer to Teaching Statement for more details).

1. Communication: Met weekly with key faculty; gave multiple presentations to different faculty groups across campus; and met with other stakeholders, such as representatives of the d.school (Hasso Plattner Institute of Design).
2. Website design: Led the design effort of creating, collecting, and editing material; and coordinated with outside contractors.
3. Publicity: Created new information session material; and coordinated with IDEO and the d.school to advertise the program.
4. Administration: Managed the name-change process; oversaw the creation of the new application process within the Stanford system; wrote descriptions of the new required application materials; communicated new procedures and requirements to the graduate committee and the student services office.
5. Workshop Organizer: “Redesigning the Design Master's at Stanford, Design Salon II,” with panel of faculty participants from Massachusetts Institute of Technology, University of California at Berkeley, Northwestern University, University of Texas at Austin, Pennsylvania State University, University of Michigan, Olin College, and Dartmouth College, Stanford, CA, March 14–15, 2017.
6. Workshop Organizer: “Redesigning the Design Master's at Stanford, Design Salon I,” with panel of participants from across Stanford, Stanford, CA, December 7, 2016.

#### Department Service

1. Product Design Graduate and Undergraduate Committee, 2014 – 2019
2. Mechanical Engineering Curriculum Planning Committee for Design Capstone Experience, 2014 – 2016
3. Mechanical Engineering Graduate Admissions Committee, 2014 – 2015
4. Advisor to 30–40 Graduate and Undergraduate Product Design and Mechanical Engineering Students per year, 2014 – 2019

5. Qualifying Examiner for Design, Manufacturing, Research, and Custom exams, 2014 – Present

#### University Service

1. Served on eight PhD Thesis Committees other than my own students, 2014 – Present
2. Participated in various dinners and presentations to recruit industry partners to Stanford research programs, 2014 – Present
3. Participated in various presentations and panels to introduce graduate students to research topics, 2014 – Present

#### Iowa State University, University and Department Service

1. Design Expo Co-organizer, Department of Mechanical Engineering, 2010 – 2014
2. Wind Energy Institute Faculty Member, 2011 – 2014
3. Council on Sustainability, 2011 – 2013
4. Graduate Education Committee, Department of Mechanical Engineering, 2010 – 2013
5. Bioeconomy Institute Faculty Advisory Board, 2009 – 2012
6. Mechanical Engineering 170, Curriculum Development Committee, 2009 – 2011

#### **F. Honors and Awards**

1. Selected Participant, National Academy of Engineering Frontiers of Engineering program (EU–US), Stockholm, Sweden, November 18 – 20, 2019.
2. Selected Advisor to honor Terman Award recipient, Vivian Xiao, Stanford, 2019.
3. Selected Participant, National Academy of Engineering Frontiers of Engineering program (US), Hartford, CT, September 25–27, 2017.
4. American Society of Mechanical Engineers Design Automation Young Investigator Award, 2012
5. Big 12 Faculty Fellowship Award, 2012
6. Mack 2050 Challenge Scholar, Iowa State University, 2009 – 2012

#### **G. Bibliographic Information**

##### **PUBLICATIONS**

Below, authors are listed as they are listed in the publications. Students and postdoctoral researchers are typically listed first, in descending order of their contributions to the research; the main advisor on the project is listed last; and other contributors are listed after the students/postdocs and before the main advisor. If there are only two authors, or there are no student authors, the main contributor is listed first. PhD and MS students in my lab appear in **bold**; undergraduate researchers are underlined; postdoctoral researchers are listed in *italics*; and PhD students that later became postdoctoral researchers in my lab are listed in ***bold italics***.

## Refereed Publications

1. **Liao, T.**, and MacDonald, E. F., Accepted, “Manipulating user’s trust of autonomous products with affective priming,” *ASME Journal of Mechanical Design* (JMD).
2. **Syal, S. M.**, and MacDonald, E. F., 2020, “Quantifying the Importance of Solar Soft Costs: A New Method to Apply Sensitivity Analysis to a Value Function,” *ASME Journal of Mechanical Design*, Vol. 142, No. 12, 121405.
3. **Syal, S. M., Ding, Y.**, and MacDonald, E. F., 2020, “Agent-Based Modeling of Decisions and Developer Actions in Wind Farm Landowner Contract Acceptance,” *ASME Journal of Mechanical Design*, Vol. 142, No. 9, 091403.
4. **Liao, T.**, Tanner, K., and MacDonald, E. F., 2020, “Revealing Insights of Users’ Perception: An Approach to Evaluate Wearable Products Based on Emotions,” *Design Science*, Cambridge University Press, Vol. 6, e14.
5. Bao, Q., *Sinitskaya, E.*, *Gomez, K. J.*, MacDonald, E. F., Yang, M. C., 2020, “A Human-Centered Design Approach to Evaluating Factors in Residential Solar PV Adoption: A Survey of Homeowners in California and Massachusetts,” *Renewable Energy*, Vol. 151, May, pp. 503–513.
6. *Sinitskaya, E.*, *Gomez, K. J.*, Bao, Q., Yang, M. C., MacDonald, E. F., 2020, “Designing Linked Journey Maps to Understand the Complexities of the Residential Solar Energy Market,” *Renewable Energy*, Vol. 145, January, pp. 1910–1922.
7. **El Dehaibi, N.**, Goodman, N. D., and MacDonald, E. F., 2019, “Extracting Customer Perceptions of Product Sustainability from Online Reviews,” *ASME Journal of Mechanical Design*, Vol. 141, No. 12, 121103.
8. *Sinitskaya, E.*, *Gomez, K. J.*, Bao, Q., Yang, M. C., and MacDonald, E. F., 2019, “Examining The Influence of Solar Panel Installers on Design Innovation and Market Penetration,” *ASME Journal of Mechanical Design*, Vol. 141, No. 4, 041702.
9. *Long, M.*, **Erickson, M.**, and MacDonald, E. F., 2019, “Consideration-Constrained Engineering Design for Strategic Insights,” *ASME Journal of Mechanical Design*, Vol. 141, No. 6, 064501.
10. **Du, P.**, and MacDonald, E. F., 2018 “A Test of the Rapid Formation of Design Cues for Product Body Shapes and Features,” *ASME Journal of Mechanical Design*, Vol. 140, No. 7, 071102.
11. **She, J.**, and MacDonald, E. F., 2018, “Exploring the Effects of a Product’s Sustainability Triggers on Pro-environmental Decision-making,” *ASME Journal of Mechanical Design*, Vol. 140, No. 1, 011102.
12. **Chen, L.**, and MacDonald, E., 2017, “Wind Farm Layout Sensitivity Analysis and Probabilistic Model of Landowner Decisions,” *ASME Journal of Energy Resources Technology*, Vol. 139, No. 3, 031202.
13. **Chen, L.**, Harding, C., Sharma, A., and MacDonald, E., 2016, “Modeling Noise and Lease Soft Costs Improves Wind Farm Design and Cost-of-Energy Predictions,” *Renewable Energy*, Vol. 97, pp. 849–859.
14. **Du, P., Miller, C.**, MacDonald, E., and Gormley, P., 2015, “Review of Supporting and Refuting Evidence for Innovation Engineering Practices,” *Design Science*, Vol. 1, October, e5.
15. MacDonald, E. F., and **She, J.**, 2015, “Seven Cognitive Concepts for Successful Eco-Design,” *Journal of Cleaner Production*, Vol. 92, April, pp. 23–36.

16. **Du, P.**, and MacDonald, E. F., 2015, "Products' Shared Visual Features Do Not Cancel in Consumer Decisions," *ASME Journal of Mechanical Design*, Vol. 137, No. 7, 071409.
17. **Du, P.**, and MacDonald, E. F., 2014, "Eye-Tracking Data Predicts Importance of Product Features and Saliency of Size Change," *ASME Journal of Mechanical Design*, Vol. 136, No. 8, 081005.
18. Morrow, W. R., Long, M., and MacDonald, E. F., 2014, "Market-System Design Optimization with Consider-then-Choose Models," *ASME Journal of Mechanical Design*, Vol. 136, No. 3, 031003.
19. Urban, G. L., Liberali, G., MacDonald, E., Bordley, R. and Hauser, J. R., 2014, "Morphing Banner Advertising," *Marketing Science*, Vol. 33, No. 1, pp. 27–46.
20. **She, J.**, and MacDonald, E., 2014, "Priming Designers to Communicate Sustainability," *ASME Journal of Mechanical Design*, Vol. 136, No. 1, 011001.
21. **Chen, L.**, and MacDonald, E., 2014, "A System-Level Cost-of-Energy Wind Farm Layout Optimization with Landowner Modeling," *Energy Conversion and Management*, Vol. 77, January, pp. 484–494.
22. Reid, T. N., MacDonald, E. F., and **Du, P.**, 2013, "Impact of Product Design Representation on Customer Judgment," *ASME Journal of Mechanical Design*, Vol. 135, No. 9, 091008.
23. **Chen, L.**, and MacDonald, E., 2012, "Considering Landowner Participation in Wind Farm Layout Optimization," *ASME Journal of Mechanical Design*, Vol. 134, No. 8, 084506.
24. MacDonald, E. F., Gonzalez, R., and Papalambros, P. Y., 2009, "Preference Inconsistency in Multidisciplinary Design Decision Making," *ASME Journal of Mechanical Design*, Vol. 131, No. 3, 031009.
25. MacDonald, E., Lubensky, A., Sohns, B. J., and Papalambros, P., 2009, "Product Semantics and Wine Portfolio Optimization," *International Journal of Product Development*, Vol. 7, No. 74, pp. 73–98.
26. MacDonald, E. F., Gonzalez, R. and Papalambros, P., 2009, "The Construction of Preferences for Crux and Sentinel Product Attributes," *Journal of Engineering Design*, Vol. 20, No. 6, pp. 609–626.
27. Briant, C.L., MacDonald, E., Balliett, R.W., and Luong, T., 2000, "Recrystallization textures in tantalum sheet and wire," *International Journal of Refractory Metals and Hard Materials*, Vol. 18, No. 1, pp. 1–8.

#### Refereed Conference/Symposia Proceedings

1. **El Dehaibi, N.**, and MacDonald, E. F. 2020. "Investigating Inter-Rater Reliability of Qualitative Text Annotations in Machine Learning Datasets," DESIGN 2020 16<sup>th</sup> International Design Conference, (virtual conference), Cambridge University Press: 21–30.
2. **Syal, S. M.**, and MacDonald, E. F. 2020. "Quantifying the Uncertainty of Solar Photovoltaic Soft Costs in the 'Cost of Renewable Energy Spreadsheet,'" DESIGN 2020 16<sup>th</sup> International Design Conference, (virtual conference), Cambridge University Press: 2157–66.
3. **El Dehaibi, N.**, Goodman, N. D., and MacDonald, E. F., 2019, "Extracting Customer Perceptions of Product Sustainability from Online Reviews," ASME International Design

Engineering Technical Conferences & Computers and Information in Engineering Conference/Design Automation Conference, Anaheim, CA, August 18–21. (Full paper, accepted). **Nominated for Best Paper Award and Fast-tracked for Journal Publication in JMD.**

4. **Liao, T.**, and MacDonald, E., 2019, “Manipulating Trust of Autonomous Products with Affective Priming,” ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference/Design Theory and Methodology, Anaheim, CA, August 18–21. (Full paper, peer-reviewed). **Nominated for Best Paper Award and Fast-tracked for Journal Publication in JMD.**
5. *Hu, W.-L.*, Rivetta, C., MacDonald, E., and Chassin, D. P., 2019, “Optimal Operator Training Reference Models for Human-in-the-loop Systems,” 52nd Hawaii International Conference on System Sciences (HICSS-52), Maui, HI, January 8–11. (Full paper, peer-reviewed).
6. *Hu, W.-L.*, Rivetta, C., MacDonald, E., and Chassin, D. P., 2019, “Modeling of Operator Performance for Human-in-the-loop Power Systems,” 21st International Conference on Human-Computer Interaction (HCI International 2019), Orlando, FL, July 26–31. (Full paper, peer-reviewed).
7. **Jou, W.**, Beaulieu, S. M., Lim, A. K., and MacDonald, E. F., 2019, “A Wizard-of-Oz Experiment to Demonstrate Water Reduction and User Training with an ‘Autonomous’ Faucet,” ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference/Design Theory and Methodology, Anaheim, CA, August 18–21. (Full paper, peer-reviewed).
8. **Liao, T.**, Tanner, K., and MacDonald, E., 2019, “Revealing Insights of Users’ Perceptions: An Approach to Evaluate Wearable Products Based on Emotions,” International Conference on Engineering Design, Delft, The Netherlands, August 5–8. (Full paper, peer-reviewed).
9. **Syal, S. M.**, **Ding, Y.**, and MacDonald, E. F., 2019, “Agent-Based Modeling of Decisions and Developer Actions in Wind Farm Landowner Contract Acceptance,” ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference/Design Automation Conference, Anaheim, CA, August 18–21. (Full paper, peer-reviewed).
10. **Jou, W.**, and MacDonald, E., 2018, “Telepathic Faucet Design for Water Conservation.” Poster session presented at the ASME International Design Engineering Technical Conferences & Computers & Information in Engineering Conference, Quebec City, Canada, August 26–29. **Award of distinction.**
11. **Liao, T.**, and MacDonald, E. F., 2018, “Effects of Collage Priming on Sustainable Design Idea Creation and Assessment,” ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference/ Design Theory and Methodology, Quebec City, Canada, August 26–29. (Full paper, peer-reviewed).
12. **Jou, W.**, and MacDonald, E., 2018, “Smart Faucet Design for Water Conservation.” Poster session presented at the IFAC Conference on Cyber-Physical & Human Systems, Miami, FL, December 13–15.
13. *Sinitskaya, E.*, Gomez, K. J., Bao, Q., Yang, M. C., and MacDonald, E. F., 2017, “Examining The Influence of Solar Panel Installers On Design Innovation And Market Penetration,” ASME International Design Engineering Technical Conferences &

- Computers and Information in Engineering Conference/Design Automation Conference, Cleveland, OH, August 6–9. (Full paper, peer-reviewed).
14. **Ramaswamy, N.**, and MacDonald, E., 2017, “Telepathic Product Design for Water Conservation,” International Conference on Engineering Design, Vancouver, Canada, August 21–25. (Full paper, peer-reviewed).
  15. **Du, P.**, and MacDonald, E. F., 2016, “Product Body Shapes, Not Features, Provide Fast and Frugal Cues for Environmental Friendliness,” ASME International Design Engineering Technical Conference & Computers and Information in Engineering Conference/ Design Theory and Methodology, Charlotte, NC, August 21–24. (Full paper, peer-reviewed).
  16. **Erickson, M.**, and MacDonald, E. F., *Long, M.*, 2016, “Modeling Consideration Gives Strategic Design Insight for Addressing Diesel and Brand Perception,” ASME International Design Engineering Technical Conference & Computers and Information in Engineering Conference/ Design Automation Conference, Charlotte, NC, August 21–24. (Full paper, peer-reviewed).
  17. **Du, P.**, and MacDonald, E. F., 2015, “Products’ Shared Visual Features Do Not Cancel in Consumer Decisions,” ASME International Design Engineering Technical Conference/ Design Theory and Methodology, Boston, MA, August 2–5. (Full paper, peer-reviewed).
  18. **Chen, L.**, and MacDonald, E., 2013, “Effects of Uncertain Land Availability, Wind Shear, and Cost on Wind Farm Layout,” ASME International Design Engineering Technical Conference/ Design Automation Conference, Portland, OR, August 4–7. (Full paper, peer-reviewed).
  19. **She, J.**, and MacDonald, E. F., 2013, “Trigger Features on Prototypes Increase Preference for Sustainability,” ASME International Design Engineering Technical Conference/ Design Theory and Methodology, Portland, OR, August 4–7. (Full paper, peer-reviewed).
  20. **Du, P.**, and MacDonald, E. F., 2013, “Eye-Tracking Data Predicts Importance of Product Features and Saliency of Size Change,” ASME International Design Engineering Technical Conference/ Design Theory and Methodology, Portland, OR, August 4–7. (Full paper, peer-reviewed).
  21. MacDonald, E. and **She, J.**, 2012, “Seven Cognitive Concepts for Successful Sustainable Design,” ASME International Design Engineering Technical Conference/ Design Theory and Methodology, Chicago, IL, August 12–15. (Full paper, peer-reviewed).
  22. **She, J.**, and MacDonald, E., 2012, “Priming Designers to Communicate Sustainability,” ASME International Design Engineering Technical Conference/ Design Theory and Methodology, Chicago, IL, August 12–15. (Full paper, peer-reviewed).
  23. *Reid, T. N.*, MacDonald, E. F., and **Du, P.**, 2012, “Impact of Product Design Representation on Customer Judgment with Associated Eye Gaze Patterns,” ASME International Design Engineering Technical Conference/ Design Theory and Methodology, Chicago, IL, August 12–15. (Full paper, peer-reviewed).
  24. *Morrow, W. R.*, *Long, M.*, and MacDonald, E. F., 2012, “Consider-then-Choose Models in Decision-Based Design Optimization,” ASME International Design Engineering Technical Conference/Design Automation Conference, Chicago, IL, August 12–15. (Full paper, peer-reviewed).
  25. *Urban, G. L.*, *Liberali, G.*, MacDonald, E., *Bordley, R.* and *Hauser, J. R.*, 2012, “Morphing Banner Advertising,” Theory and Practice in Marketing conference, Harvard



Business School, Cambridge, MA, May 3–5. (Full Paper, invited by committee for participation).

26. **Chen, L.**, and MacDonald, E., 2011, “A New Model for Wind Farm Layout Optimization with Landowner Decisions,” ASME International Design Engineering Technical Conference/Design Automation Conference, Washington, DC, August 28–31. (Full paper, peer-reviewed).
27. MacDonald, E., Whitefoot, K., Allison, J. T., Papalambros, P. Y., and Gonzalez, R., 2010, “An Investigation of Sustainability, Preference, and Profitability in Design Optimization,” ASME International Design Engineering Technical Conference/Design Automation Conference, Montreal, Canada, August 15–18. (Full paper, peer-reviewed).
28. MacDonald, E. F., Gonzalez, R. and Papalambros, P. Y., 2007, “Preference Inconsistency in Multidisciplinary Design Decision Making,” ASME International Design Engineering Technical Conference/Design Automation Conference, Las Vegas, NV, September 4–7. (Full paper, peer-reviewed).
29. MacDonald, E., Gonzalez, R., and Papalambros, P. Y., 2007, “The Construction of Preferences for Crux and Sentinel Product Attributes,” International Conference on Engineering Design, Paper number 824, Paris, France, August 28–31. (Full paper, peer-reviewed).
30. MacDonald, E., Backsell, M., Gonzalez, R., and Papalambros, P. Y., 2006, “The Kano Method’s Imperfections, and Implications in Product Decision Theory,” International Design Research Symposium, Seoul, South Korea, November 10–11. (Full paper, peer-reviewed).

#### Non-Refereed Publications

1. Klotz, L. *et al.*, 2019, Twenty Questions about Design Behavior for Sustainability, Report of the International Expert Panel on Behavioral Science for Design. New York, NY
2. MacDonald, E., 2008, The Construction of Preference in Engineering Design and Implications for Green Products, PhD thesis, University of Michigan, Ann Arbor. Nominated by Department of Mechanical Engineering for university-wide Distinguished Dissertation Award at University of Michigan.
3. MacDonald, E., 1998, “Texture Analysis: Tantalum and Tungsten.” Unpublished Honors Undergraduate Thesis, Brown University.

#### Book Chapters in Print

1. **She, J.**, Seepersad, C. C., Holttä-Otto, K., and MacDonald, E. F., 2018, “Priming Designers Leads to Prime Designs,” in *Design Thinking Research*, H. Plattner, C. Meinel, and L. Leifer, eds., Springer, Cham.
2. Dong, A., and MacDonald, E., 2017, “From Observations to Insights: The Hilly Road to Value Creation,” in *Analysing Design Thinking: Studies of Cross-Cultural Co-creation*, B. T. Christensen, L. J. Ball, and K. Halskov, eds., London: CRC Press/Taylor & Francis.
3. Urban, G. L., Liberali, G., MacDonald, E., Bordley, R., and Hauser, J. R., 2016, “Morphing Banner Advertising,” in *From Little’s Law to Marketing Science: Essays in Honor of John D. C. Little*, J. R. Hauser and G. L. Urban, eds., Cambridge, MA: MIT Press.

4. **Du, P.,** and MacDonald, E., 2015, “Eye-tracking Aids in Understanding Consumer Product Evaluations,” in *The Psychology of Design: Creating Consumer Appeal*, R. Batra, C. Seifert, and D. Brei, eds., New York: Routledge.

## PRESENTATIONS

### Invited Plenary Talks and Distinguished Lectures

1. “Quantified Cognitive Empathy for Design Stakeholders to Increase Sustainability,” Keynote Lecture, Engineering Sustainability Conference, Pittsburg, PA, April 8, 2019.
2. “Empathy-building and Social Innovation,” Keynote at Hitachi Social Innovation Center Opening, Santa Clara, CA, January 13, 2016.
3. “Cars and Cognitive Empathy,” Spring Workshop Keynote Talk, Hasso Plattner Design Thinking Research Program, March 13, 2015.

### Major Invited Presentations

1. “Designing for Customer Consideration of Alternative Fuel Vehicles (Instead of Final Purchase),” University of California at Berkeley, Institute of Transportation Studies, September 21, 2018.
2. “Cars, Cognitive Empathy, and the Uncanny Valley,” Webinar, Center for Automotive Research at Stanford, April 2, 2015.
3. “Cars and Cognitive Empathy,” Ford Motor Company, Palo Alto, CA, February 26, 2015.
4. “Sustainable Product Engineering and Human Behavior,” Precourt Institute for Energy, Stanford University, January 13, 2015.
5. “How Choice Models Inform Consumer Design,” with W. Ross Morrow, General Motors, Warren, MI, June 13, 2013.
6. “Successful Sustainable Design at the Intersection of Engineering and Human Behavior,” Iowa EPSCoR Policy Seminar Series, Iowa State University, Ames, IA, March 5, 2013.
7. “Seven Cognitive Concepts for Successful Sustainable Design,” Osborne Research Club, Iowa State University, Ames, IA, April 9, 2012.
8. “Reducing Risk for Developers and Landowners Using Wind Farm Layout Optimization,” Wind Energy Institute, Iowa State University, Ames, IA, December 21, 2012.
9. “Customer Decisions and Sustainable Design,” Deere & Company, Moline, IL, July 14, 2010.
10. “Customer Decisions and Sustainable Design,” 3M, Staples, MN, April 20, 2010.
11. “Customer Decisions and Sustainable Design,” Deere & Company, Moline, IL, April 13, 2010.
12. “Why People (Don’t) Buy Green Products,” The Mathworks, Natick, MA, July 30, 2009.
13. “Why People (Don’t) Buy Green Products,” Whirlpool Corporation, Benton Harbor, MI, August 2, 2007.
14. “Why People (Don’t) Buy Green Products,” Ford Motor Company, Dearborn, MI, May 3, 2007.

### Other Invited Presentations

1. “A Wizard-of-Oz Experiment to Demonstrate Water Reduction and User Training with an ‘Autonomous’ Faucet,” Hot Water Forum Virtual Conference, July 21–29, 2020. (Invited Presentation).
2. “An Approach to Evaluate Wearable Products Based on Emotions,” eWEAR Conference, Stanford University, Stanford, CA, September 12, 2019.
3. “Case study: Design for Comfort and Delight of Skin Electronics,” Samsung, Dongtan, South Korea, July 2019.
4. “What Sustainable Designers Can Learn from Behavioral Science,” Panel presentation and discussion, Engineering Sustainability Conference, Pittsburg, PA, April 9, 2019.
5. “Analyze and Test: Data-driven Human-Centered Design,” CTO Forum, Half Moon Bay, CA, October 28, 2019 (also panel moderator).
6. “Managing Your Research Program and Budget” (Panel Member), Postdoc Academic Chat, Stanford University, Stanford, CA, October 18, 2018.
7. “Design for Comfort and Delight of Skin Electronics,” Samsung, Dongtan, South Korea, July 2018.
8. “Quantified Cognitive Empathy,” CTO Forum, Half Moon Bay, CA, November 11, 2018 (also panel moderator).
9. “Managing a Research Program – Insights for Beginners” (Panel Member), Postdoc Academic Chat, Stanford University, Stanford, CA, February 14, 2018.
10. “Graduate Programs in Design” (Panel Member), International Design Technical Conference, Brooklyn, NY, August 2008.
11. “Sustainability Round-table Discussion” (Panel Member), University of Michigan Society of Automotive Engineers, Ann Arbor, MI, April 2007.
12. “An Introduction to the Kano Method, an Imperfect Product Design Methodology, and its Implications in Decision Theory,” Decision Consortium, Psychology Department, University of Michigan, Ann Arbor, MI, September 28, 2006.
13. “Impact of Technology on the Human Condition” (Panel Member), Tau Beta Pi Martin Luther King Lecture Series, University of Michigan, Ann Arbor, MI, February 2005.
14. “Breaking the Glass Ceiling” (Panel Member), Tau Beta Pi Martin Luther King Lecture Series, University of Michigan, Ann Arbor, MI, February 2004.

### Creative Works (Exhibitions, Competitions, and Performances Executed)

1. Department of Mechanical Engineering Design Expo, Co-coordinator with W. Ross Morrow, Iowa State University, 2010 – 2014 (one per semester).
2. Crayella Umbrella, Winner Umbrella-Inside-Out Cradle To Cradle Design Competition, *ID Magazine* and *Treehugger.com* (with N. Vinson, T. Koenigsknecht, and M. Uphues), 2006. Available: <http://www.coroflot.com/erinmacdonald/Crayella>
3. Mass Collaboration = Innovation, Better Living Using Engineering (BLUE) Lab, Installation at the Duderstadt Center Gallery, University of Michigan, 2006. Available: <http://www.coroflot.com/erinmacdonald/Mass-Collaboration-equals-Innovation>
4. A visual indication of natural resource consumption in everyday objects, Installation at the Duderstadt Center Gallery, University of Michigan, 2003. Available: <http://www.coroflot.com/erinmacdonald/Art>

### Contributed Conference Presentations (Partial List)

1. MacDonald, E., Follmer, S., Burnett, W., and Kelley, D., "Designing the Master's of Engineering in Design Impact," International Conference on Design Creativity, Atlanta, GA, November 2–4, 2016. (Abstract and Poster, Reviewed by Organizers).
2. MacDonald, E., "Quantified Cognitive Empathy," presented at the Harvey Mudd Design Workshop, Claremont, CA, May 28–30, 2015. (Poster).
3. **She, J.**, and MacDonald, E., "Using Priming to Design Features that Influence Sustainable Purchases," INFORMS Annual Meeting, San Francisco, CA, November 9–12, 2014.
4. MacDonald, E., *Long, M.*, and Morrow, W. R., "Is Modeling Consideration Important for Product Strategy?," INFORMS Annual Meeting, San Francisco, CA, November 9–12, 2014.
5. *Long, M.*, Morrow, W. R., and MacDonald, E., "Design Optimization with the Consider-Then-Choose Behavioral Model," SIAM Conference on Optimization in San Diego, CA, May 19–22, 2014.
6. Morrow, W. R., *Long, M.*, and MacDonald, E., "Is Modeling Consideration Important for Product Strategy?," Marketing Science Seminar Series, MIT Sloan School of Business Seminar Series, Cambridge, MA, October 8, 2014. (Invited Presentation).
7. MacDonald, E., and **Chen, L.**, "Effects of Noise Impact and Landowner Compensation on Wind Farm Layout Design Under Uncertainty," ASME Conference on Energy Sustainability, Boston MA, June 30–July 2, 2014. (Abstract and Technical Presentation).
8. *Long, M.*, Morrow, W. R., and MacDonald, E., "Is Modeling Consideration Important to Product Portfolio Design?," 2014 INFORMS Marketing Science Conference, Atlanta, GA, June 12–14, 2014. (Abstract and Technical Presentation).
9. MacDonald, E., and **She, J.**, "Examining Consideration Sets with Physical Prototypes," INFORMS Marketing Science Conference, Atlanta, GA, June 12–14, 2014. (Abstract and Technical Presentation).
10. MacDonald, E., and **Du, P.**, "Eye-tracking Aids in Understanding Consumer Product Design Evaluations," Advertising and Consumer Psychology Conference: The Psychology of Design, Ann Arbor, MI, May 29–31, 2014.
11. **She, J.**, and MacDonald, E., "Using Priming to Design Features and Influence Consumer Decisions," Advertising and Consumer Psychology Conference: The Psychology of Design, Ann Arbor, MI, May 29–31, 2014. (Abstract and Poster).
12. **She, J.**, and MacDonald, E., "Sustainable Design Cues Affect Customer Preference Constructions," Max Planck Summer Institute on Bounded Rationality, Berlin, Germany, June 18–25, 2013. (Abstract and Poster).
13. **Chen, L.**, and MacDonald, E., "Effects of Uncertain Land Availability, Wind Shear, and Cost on Wind Farm Layout," Iowa Wind Energy Association Annual Conference, Des Moines, IA, March 25–27, 2013. (Poster).
14. **Chen, L.**, and MacDonald, E., "A Cost-of-Energy Wind Farm Layout Optimization with Landowner Remittances and Participation Rates," Iowa Wind Energy Association Annual Conference, Des Moines, IA, March 25–27, 2013. (Poster).
15. **Chen, L.**, and MacDonald, E., "Effects of Uncertain Land Availability, Wind Shear, and Cost on Wind Farm Layout," 2nd National Renewable Energy Laboratory Wind Energy

Systems Engineering Workshop, Broomfield, CO, January 29–30, 2013. (Abstract and Poster).

16. **Chen, L.**, and MacDonald, E., “A Cost-of-Energy Wind Farm Layout Optimization with Landowner Remittances and Participation Rates,” 2nd National Renewable Energy Laboratory Wind Energy Systems Engineering Workshop, Broomfield, CO, January 29–30, 2013. (Abstract and Poster).
17. **Chen, L.**, and MacDonald, E., “Wind Farm Layout Optimization with Representation of Landowner Remittances and Other Costs,” ASME Conference on Energy Sustainability, San Diego, July 2012. (Abstract and Technical Presentation).
18. **Chen, L.**, and MacDonald, E., “Wind Farm Layout Optimization with Representation of Landowner Remittances and Other Costs,” EPSCoR All-hands Poster Session, Cedar Rapids, MI, July 31, 2012. (Poster).
19. **Chen, L.**, and MacDonald, E., “A New Model for Wind Farm Layout Optimization with Landowner Decisions,” Iowa Wind Energy Association Annual Conference, Des Moines, IA, April 9, 2012. (Poster).
20. MacDonald, E., “Investigation of Societal Concerns in Wind Farm Design Optimization,” Iowa State University EPSCoR Workshop Presentation, Ames, IA, November 29, 2012. (Technical Presentation).
21. MacDonald, E., “Seven Cognitive Concepts for Successful Sustainable Design,” INFORMS Conference, Charlotte, NC, November 13–17, 2011. (Abstract and Technical Presentation).
22. **She, J.**, and MacDonald, E., “Creation of Design Methods that Facilitate Customer Decision-Making on Sustainable Products,” INFORMS Conference, Charlotte, NC, November 13–17, 2011. (Abstract and Technical Presentation).
23. MacDonald, E., Urban, G., Kim, J., and Bordley, R., “Improving Click-through with Web Advertisements Designed for Cognitive Style,” INFORMS Marketing Science Conference, Cologne, Germany, June 17–19, 2010. (Abstract and Technical Presentation).
24. Urban, G., Kim, J., MacDonald, E., Hauser, J., and Dzyabura, D., “Developing Consideration Rules for Durable Goods Markets,” INFORMS Marketing Science Conference, Cologne, Germany, June 17–19, 2010. (Abstract and Technical Presentation).
25. MacDonald, E., “Ecodesign SIG Workshop,” International Conference on Engineering Design, Stanford, CA, August 24–27, 2009. (Invited Break-out Session Leader).
26. MacDonald, E., and Gonzalez, G., “A Hybrid Model of Decision-Making Under Uncertainty,” 2nd International Engineering Systems Symposium, Massachusetts Institute of Technology, Cambridge, MA, June 15–17, 2009. (Abstract and Technical Presentation).
27. MacDonald, E., Urban, G., and Hauser, J., “Would You Consider a Buick Even if It Were #1 in JD Power?,” INFORMS Marketing Science Conference, Ann Arbor, MI, June 4–6, 2009. (Abstract and Technical Presentation).
28. Silinskaia, D., and MacDonald, E., “Non-compensatory Modeling of Consideration—Theory and Application at GM,” MIT Center for Digital Business Annual Conference, Massachusetts Institute of Technology, Cambridge, MA, May 19, 2009. (Abstract and Technical Presentation).

29. MacDonald, E., Gonzalez, R., and Papalambros, P., "The Construction of Preferences for Crux and Sentinel Product Attributes," Decision Consortium Conference, University of Michigan, Ann Arbor, MI, May 22, 2007. (Abstract and Technical Presentation).
30. Hernandez, M., and MacDonald, E., "Sustainability in the Developed World," Engineers for a Sustainable World Conference, Austin, TX, October 5–9, 2005. (Abstract and Technical Presentation).

#### Department Seminars

1. "Quantified Cognitive Empathy in Sustainable Design," Northwestern Segal Design Institute, Evanston, IL, November 12, 2019.
2. "Quantified Cognitive Empathy in Sustainable Design," MIT Integrated Design and Management Program, Interdisciplinary Design Conversations, Cambridge, MA, November 5, 2019.
3. "Stanford's Design Impact Master's Degree," Berkeley Institute of Design, UC Berkeley, Berkeley, CA, January 5, 2019.
4. "Sustainable Design Engineering and Human Behavior," Department of Mechanical Engineering, University of Illinois, Urbana-Champaign, IL, October 3, 2016.
5. "Sustainable Design Engineering and Human Behavior," Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, October 30, 2015.
6. "Building Cognitive Empathy in Design Practice and Research," College of Engineering, Brown University, Providence, RI, November 20, 2014.
7. "Cognitive Empathy Advances Design Research: Four Concepts, Three Examples," Department of Mechanical Engineering, Stanford University, Stanford, CA, April 30, 2014.
8. "Cognitive Empathy in Design Practice and Research," Department of Mechanical Engineering, Stanford University, Stanford, CA, February 19, 2014.
9. "Successful Sustainable Design at the Intersection of Engineering and Human Behavior," Department of Mechanical Engineering, Cornell University, Ithaca, NY, March 26, 2013.
10. "Successful Sustainable Design at the Intersection of Engineering and Human Behavior," Department of Mechanical Engineering, Oregon State University, Corvallis, OR, February 28, 2013.
11. "Successful Sustainable Design at the Intersection of Engineering and Human Behavior," Segal Design Institute, Northwestern University, Evanston, IL, August 16, 2012.
12. "The Human Factor in Sustainable Engineering," Department of Mechanical Engineering, University of Iowa, Iowa City, IA, November 11, 2011.
13. "Interdisciplinary Sustainable Design," Marketing Colloquium Distinguished Speaker Series, School of Business, Iowa State University, Ames, IA, March 4, 2011.
14. "Modeling Customer Preference in the Design of Sustainable Products," Department of Mechanical Engineering, Oregon State University, Corvallis, OR, November 30, 2009.
15. "The Construction of Preference in Engineering Design," Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, April 30, 2008.
16. "The Construction of Preference in Engineering Design," Department of Mechanical Engineering, Iowa State University, Ames, IA, March 27, 2008.
17. "The Construction of Preference in Engineering Design," Department of Mechanical Engineering, Clemson University, Clemson, SC, March 12, 2008.

18. "The Construction of Preference in Engineering Design," Lab for Manufacturing and Productivity, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, March 6, 2008.
19. "The Construction of Preference in Engineering Design," Center for Design Research, Department of Mechanical Engineering, Stanford University, Stanford, CA, February 28, 2008.
20. "The Construction of Preference in Engineering Design," Berkeley Energy and Sustainable Technologies Lab, Department of Mechanical Engineering, University of California at Berkeley, Berkeley, CA, February 2008.
21. "The Construction of Preference in Engineering Design," Department of Industrial Engineering, Pennsylvania State University, State College, PA, February 21, 2008.
22. "The Construction of Preference in Engineering Design," Department of Mechanical Engineering, Northwestern University, Evanston, IL, February 13, 2008.
23. "Why People (Don't) Buy Green Products from a Product Designer's Perspective," School of Natural Resources and Environment, University of Michigan, Ann Arbor, MI, October 18, 2007.

## **PATENTS**

1. MacDonald, E., Vinson, N., Koenigsnecht, T. and Uphues, M., 2010. *Umbrella*, US Patent No. 7,775,226.
2. Ganio, T., and MacDonald, E., 2001. *Sleeping Bag Device*, US Patent No. 6,292,961 B1.

## **STUDENTS**

### **PhD Students**

#### Current

1. Yiqing Ding  
Thesis: TBD  
Anticipated graduation: May 2022
2. Naser El-Dehaibi  
Thesis: Extracting product design value from online reviews  
Anticipated graduation: December 2020

#### Former

1. Ting Liao  
Thesis: Trust augmentation for autonomous and smart products  
Graduated: June 2020  
Current Position: Assistant Professor, Stevens Institute of Technology, Hoboken, NJ
2. Ping Du (ISU)  
Thesis: Investigation of decisions about product forms using eye-tracking data  
Graduated: May 2016  
Current Position: UX Researcher at Dollar Shave Club
3. Jinjuan She (ISU), *winner of ISU Teaching Excellence Award, Fall 2013*

Thesis: Designing features that influence decisions about sustainable products

Graduated: October 2013

Current Position: Assistant Professor, Miami University, Oxford, OH

4. Le Chen (ISU), *winner of ISU Research Excellence Award, Fall 2013*

Thesis: Wind farm layout optimization under uncertainty with landowners' financial and noise concerns

Graduated: October 2013

Current Position: Homemaker

## **Postdoctoral Researchers**

### Current

None

### Former

1. Wan-lin Hu

Appointed: November 2017 – March 2020

Current position: Associate Staff Scientist, SLAC National Accelerator Laboratory, Stanford University

2. Sahuck Oh

Appointed: February 2017 – February 2018

Current Position: Assistant Professor (equivalent position), Korea Aerospace University

3. Kate Sinitskaya

Appointed: May 2016 – July 2018

Current position: Homemaker

4. Minhua Long

Appointed: May 2016 – August 2017

Current position: Researcher at Electric Power Research Institute, Palo Alto, CA

5. Le Chen (PhD ISU, Postdoc Stanford)

Appointed: Winter 2015 – Autumn 2015

Current position: Homemaker

6. Jinjuan She (at ISU)

Appointed: Winter 2014 – Spring 2014

Current position: Assistant Professor, Miami University, Oxford, OH

7. Tahira Reid (at ISU)

Appointed: Autumn 2010 – Summer 2011

Current position: Associate Professor, Department of Mechanical Engineering, Purdue University, West Lafayette, IN

## **Master's Students with Publications**

1. Samantha Beaulieu (conference paper)

Anticipated Graduation: December 2020

2. Willam Jou (conference paper and award-winning poster)

Graduated June 2019

Current Position: Mechanical Engineer, Mindtribe Product Engineering



3. Naren Ramaswamy (conference paper)  
Graduated: Spring 2017  
Current position: Apple Engineering Program Manager, Apple Inc.
4. Michael Erickson (1 journal paper and 1 conference paper)  
Graduated: Winter 2016  
Current position: Product Manager at Facebook
5. Chris Miller (at ISU) (journal paper)  
Graduated: May 2013  
Current position: Unknown

### **Undergraduate Students with Publications**

1. Kelly Lim (conference paper)  
Graduated: Spring 2020
2. Kelley Gomez (3 journal papers and 1 conference paper)  
Graduated: Spring 2017  
(Samantha Beaulieu, listed as master's student, began her work as an undergraduate in the lab)