

NASER DEHAIBI

Education

Stanford University

PhD., Mechanical Engineering

Stanford Ignite Certificate Program

Dissertation title: *Investigating customer perceptions of sustainable features to drive demand for sustainable products*

Advisor: Prof. Erin MacDonald

Readers: Prof. Noah Goodman, Prof. Conrad Tucker

Expected: June 2021

Stanford, CA

University of Michigan

M.Eng., Energy Systems Engineering

Department of Integrative Systems + Design

December 2015

Ann Arbor, MI

Texas A&M University

B.S., Mechanical Engineering

Engineering Systems Management Certificate

May 2014

College Station, TX & Doha, Qatar

Awards & Distinctions

Qatar Research Leadership Program Award

Qatar Foundation

2014 - Present

Doha, Qatar

Granted a competitive fellowship to pursue higher education in the United States (Masters & PhD). The fellowship provides a research grant of up to \$50,000 per year in addition to covering tuition fees and a stipend.

Co – President

Advanced Degree Candidates Consulting Club, Stanford University

2019 - 2020

Stanford, CA

Managed a team of six executive board members to support advanced degree candidates interested in consulting.

Professional Experience

Research Assistant

Stanford University

Sep 2016 - Present

Stanford, CA

Developed design methods to help designers determine customer perceptions of product sustainability, which may differ from actual sustainability, using crowdsourced annotations of online reviews and machine learning.

Course Assistant

Stanford University

Apr 2017 - Present

Stanford, CA

Assisted with multiple courses at Stanford covering undergraduate, graduate, and executive levels. Topics include design thinking, modeling profit in consumer products, experimental design with users, and culture and diversity in engineering.

Edison Engineering Development Program (EEDP) Intern

GE Oil & Gas

Jul - Aug 2013

Doha, Qatar

Executed Six Sigma to optimize steam turbine design specifications using proprietary machine learning algorithms.

Summer Intern – Operations

Qatargas (formerly RasGas Company Limited)

Jul - Aug 2012

Doha, Qatar

Facilitated maintenance with control room operators for a plant generating \$10 billion in annual revenue.

Works Under Review

El Dehaibi, N., Herrera, A., Rattanakongkham, D., and MacDonald, E. F., 2021, "Driving Online Purchase Decisions for Product Sustainability using Features Perceived as Sustainable," unpublished.

El Dehaibi, N., and MacDonald, E. F., 2021, "Differentiating Online Products using Features Perceived as Sustainable," unpublished.

Journal Publications

El Dehaibi, N., Goodman, N. D., and MacDonald, E. F., 2019, "Extracting Customer Perceptions of Product Sustainability from Online Reviews," *Journal of Mechanical Design*, Vol. 141, No. 12, pp. 121103. Available online at: <https://doi.org/10.1115/1.4044522>

Conference Proceedings

El Dehaibi, N., Liao, T., and MacDonald, E. F., 2021, "Validating Perceived Sustainable Design Features Using a Novel Collage Approach," ASME 2021 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference/Design Automation Conference, Online, August 17 – 20.

El Dehaibi, N., and MacDonald, E. F., 2020, "Investigating Inter-Rater Reliability of Qualitative Text Annotations in Machine Learning Datasets," 16th International Design Conference, Online, October 26 – 29.

El Dehaibi, N., and MacDonald, E. F., 2019, "Extracting Customer Perceptions of Product Sustainability from Online Reviews," ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference/Design Automation Conference, Anaheim, California, August 18 – 21.

Book Chapters

Bohra, M., **El Dehaibi, N.**, Sanfilippo, A., and Khraisheh, M., 2018, "Potential Impacts of Solar Energy Integration on Fuel-Mix Strategies in Qatar", *The Economics of Renewable Energy in the Gulf*, Routledge, London, U.K., pp. 167-187. Available online at: <https://doi.org/10.4324/9780429434976>

Teaching Cases

Bill, Q., Spevacek, C., **El Dehaibi, N.**, Johnson, W., and Hoffman, Andrew, 2016, "Uber and the Sharing Economy: Global Market Expansion and Reception", Erb Institute, Ann Arbor, MI, case study#1-430-479. Available online at: <https://wdi-publishing.com/product/uber-and-the-sharing-economy-global-market-expansion-and-reception/>

Poster Sessions

El Dehaibi, N., and MacDonald, E., "Semantic Classification for Identifying Sustainable Content in Online Product Reviews," Poster session presented at the ASME 2018 International Design Engineering Technical Conferences & Computers & Information in Engineering Conference, Quebec City, Quebec, August 26-29.

Bohra, M., **El Dehaibi, N.**, Sanfilippo, A., and Khraisheh, M., "Potential Impacts of Solar Energy Integration on Fuel-Mix Strategies in Qatar," Poster session presented at the 2017 European Photovoltaic Solar Energy Conference and Exhibition, Amsterdam, The Netherlands, September 25-29.

El Dehaibi, N., Barth, N., and Ahzi, S., "Thermal Stress Analysis of Photovoltaic Modules using Thermo-elastic Modeling," Poster session presented at the 2015 University of Michigan Engineering Research Symposium, Ann Arbor, MI, November 20.

Summary of Research Projects

Investigating Online Purchasing Decisions using Features Perceived as Sustainable

Stanford, CA

- Managed two undergraduate researchers over one year driving a research project end-to-end
- Built a simulated Amazon shopping experience using HTML with modified images, descriptions, and reviews
- Designed and rendered French Press products based on feature perception cues with SolidWorks
- Recruited participants from Amazon Mechanical Turk for a within-subject shopping simulation with incentive alignment to simulate purchasing decisions
- Conducted A/B testing to measure significant changes in purchasing behavior between conditions

Validating Customer Perceptions from Online Product Reviews Resonate with Users

Stanford, CA

- Developed a webapp using React Native consisting of a collage with two axes, “sustainability” and “like”, and drag and drop features
- Recruited participants from Amazon Mechanical Turk to place French Press products on the collage and select salient features for each product
- Conducted multivariate analyses of variance and repeated measures correlations based on placement of products and features on the collage
- Investigated the generalizability of the findings using a variety of products

Extracting Customer Perceptions from Online Product Reviews

Stanford, CA

- Created a crowdsourcing approach to annotate online reviews based on perceived customer value
- Developed custom survey features in Qualtrics using JavaScript and Amazon Web Services
- Built a natural language processing machine learning algorithm to extract customer perceptions from online reviews
- Completed the Institutional Review Board training and submitted a human experiments protocol
- Investigated perceived sustainability of French Presses as a case study and formulated insights for designers

Creating Product Designs that Communicate Sustainability Perceptions

Stanford, CA

- Mentored three Product Design undergraduate students as part of the Summer Undergraduate Research Institute (SURI) on a research project
- Developed design concepts of French Presses based on sustainability criteria and created renderings on SolidWorks
- Designed and conducted pilot tests to assess how participants perceive design features
- Tested hypotheses using non-parametric and post-hoc analyses

Investigating Inter-Rater Reliability in Machine Learning Datasets

Stanford, CA

- Performed a literature review on statistical analyses within inter-rater reliability
- Wrote the first publicly available Python code to calculate inter-rater reliability on qualitative text annotations
- Measured and compared four variations of inter-rater reliability for qualitative annotations of online reviews
- Proposed suggestions to designers on measuring reliability of qualitative annotations for machine learning datasets

Understanding Sustainability Perceptions as Product Descriptions

Stanford, CA

- Created a crowdsourcing approach to evaluate products based on perceived sustainability and interest
- Developed an interactive interface using Java to quantify perceived product sustainability
- Designed and conducted pilot tests that scaled to over 1000 users in the full launch
- Proposed guidelines for designers on modifying online product descriptions and designs to emphasize features that have perceived customer value as indicated in their written reviews

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Simulating Solar Energy Integration on Fuel Mix Strategies in Qatar

Doha, Qatar

- Developed a Monte-Carlo module in MATLAB to promote gradual substitution of oil and gas production with solar energy in Qatar
- Advised Qatari officials on cost effective energy policies for economic stability

Investigating Thermoelastic Modeling of Photovoltaic Modules

Doha, Qatar

- Designed a thermo-elastic model of solar thermal stresses within 96% accuracy of a finite element model
- Presented methods and findings at the Engineering Graduate Symposium, University of Michigan

Teaching Experience

Design Experiments (ME341) - Course Assistant

2021

Stanford University

Stanford, CA

- Guided student projects related to the relationship between users and products
- Coached students with survey design and asking meaningful questions while reducing biases
- Taught statistics concepts for testing research hypotheses and presented demos on using R
- Assisted faculty with lesson plans and course content

Analytical Product Design (ME215C) - Lead Course Assistant

2017 - 2019

Stanford University

Stanford, CA

- Led a team of three course assistants to mentor a class of up to 50 undergraduate students per quarter
- Guided students with building engineering, manufacturing, and marketing models to optimize product specifications for maximum profit
- Facilitated team building exercises to assist students in building strong, healthy teams
- Co-organized Stanford Design EXPE where students showcase their final products

Innovation Masters Series (Stanford Center for Professional Development) - Course Assistant

2019

Stanford University

Stanford, CA

- Assisted Design professors with a course tailored for 45 executives from Visa and client companies
- Coached participants to boost creativity with brainstorming and prototyping skills
- Led participants on campus tours and assisted with course logistics

Expanding Engineering Limits: Culture, Diversity, and Equity (ENGR 217) - Course Assistant

2019

Stanford University

Stanford, CA

- Co-taught a class of 80 undergraduate students as part of a teaching team of three faculty members and two course assistants
- Facilitated panel discussions with scholars and engineers on the interdependencies of engineering, diversity, culture, and equity
- Guided students on 10-week personal projects exploring topics related to the course
- Designed the Canvas course website to accommodate students enrolled in sections with different credit requirements

Professional Associations

American Society of Mechanical Engineers (ASME)