

NASREDDINE EL-DEHAIBI

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Education

Stanford University

PhD., Mechanical Engineering

Stanford Ignite Certificate Program

Dissertation title: *Investigating customer perceptions of sustainability in product features*

Advisor: Prof. Erin MacDonald

Readers: Prof. Noah Goodman, Prof. Conrad Tucker

Expected: August 2020

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.

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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., and MacDonald, E. F., 2020, "Investigating Inter-Rater Reliability of Qualitative Text Annotations in Machine Learning Datasets," 16th International Design Conference, Dubrovnik, Croatia, May 18-21.

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., "Semantic Classification for Identifying Sustainable Content in Online Product Reviews," 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

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

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Creating Product Designs that Convey 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

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

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

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

2019
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)