Orianna DeMasi

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Overview

I am passionate about applying emergent methods from data science, machine learning, and NLP to develop technologies with positive real-world impact. My research has applied intelligent methods to human-generated datasets to develop and evaluate tools specifically for mental health. I enjoy working on multi-disciplinary teams with complex and messy datasets and am especially concerned with whether computational methods are reliable and effective in important real-world applications.

Education

2019 **Ph.D. Computer Science**, *University of California, Berkeley*.
Evaluation of Methods for Data-Driven Tools that Empower Mental Health Professionals

2009 **B.Sc. Mathematics**, *McGill University*.

Experience

2019-2021 **University of California, Davis**, *Postdoctoral Researcher*, Computer Science.

- Working on conversational agents and text generation research.
- Developed, trained, evaluated neural net generation + retrieval framework with GPT-2 to improve persona-consistency and text diversity to simulate users and train hotline counselors.
- Used linear models to assess consequences of errors in chatbot counseling responses.
- Explored developing a peer-support chat agent, neural agents that continually learn new tasks, and ethical implications of open-domain neural generated text.
- Built, deployed chatbots + websites for 3 interactive user studies and dataset collection.
- Collaborated on multi-disciplinary teams with multiple stakeholders.
- Led 3 approved IRB applications, wrote 2 grants.

2012-2019 **University of California, Berkeley**, *Graduate Student Researcher*, Electrical Engineering and Computer Sciences.

- Thesis focused on using computational methods to build tools for mental health professionals.
- Engineered features and developed machine learning models with time series of mobile phone sensors to predict user wellbeing, e.g., mood.
- Developed framework to rigorously evaluate machine learning model predictions on longitudinal patient data with statistical permutation tests.
- Collaborated with researchers in UCSF Psychiatry to evaluate an SMS texting program to improve outcomes for CBT therapy to treat clinical depression. Used Mann–Whitney U tests, mixed-effects linear models to analyze patient responses in an RCT.
- Designed, collected, cleaned, and curated complex, messy datasets of various data types.
- Led, collaborated on, and communicated with multi-disciplinary teams, including crisis counselors and clinicians, to run 2 user studies, 1 RCT, and 1 survey.

2015-2016 **Twitter Inc**, *Data Science Intern*, Business Insights Team.

- Developed clustering framework for hashtag communities.
- Identified hashtag communities with increased engagement.
- Wrote paper nominated for Best Paper at ICWSM '16.

2010-2012 **Lawrence Berkeley National Laboratory**, *Computer Systems Engineer*, Complex Systems Group.
Mathematical cyber-security project. Worked on using machine learning to identify what code was being run on supercomputers as a potential way to monitor allocation usage.

2009 **McGill University**, *Research Assistant*.
Worked with Professor Tony Humphries to study a delay differential equation with two state dependent delays (SDDE).

2008 **Texas A&M University**, *Research Experience for Undergraduates*.
Worked with John Walton and Yuliya Gorb to model the migration of coyotes in the US.

2007 **Woods Hole Oceanographic Institute**, *Summer Student Fellowship*.
Worked with Steve Lentz to model tidal dynamics near Cape Cod.

Awards

2018 **EECS Rising Stars invited participant**, *Massachusetts Institute of Technology*.
Selective workshop for women considering academic careers in EECS.

2016-2018 **Data Science Fellowship**, *Berkeley Institute for Data Science*.
Fellowship for two years of graduate research.

2018 **First place award**, *Big Ideas innovation competition, UC Berkeley*.
Connected Communities category.

2017 **Tech for Social Good Fellowship**, *The Center for Information Technology Research in the Interest of Society (CITRIS), UC Berkeley*.
Research project funding.

2014 **Mobile App Challenge**, *Center for Information Technology Research in the Interest of Society (CITRIS), UC Berkeley*.
Award for developing the MoodStreamer smartphone application.

2012-2016 **ARCS Graduate Fellowship**, *ARCS Foundation, Northern California chapter*.
Full support for four years of graduate research.

2012 **Excellence Award**, *Department of Electrical Engineering and Computer Sciences, UC Berkeley*.

2009 **Summer Undergraduate Research Award**, *McGill University*.

2006-2007 **Fellowship for Outstanding Scholarship**, *Western Connecticut State University*.

Selected Publications

O. DeMasi, Y. Li, Z. Yu *A Multi-Persona Chatbot for Hotline Counselor Training.* EMNLP Findings (2020)

CA. Figueroa, O. DeMasi, R. Hernandez-Ramos, and A. Aguilera *Who benefits most from adding technology to depression treatment and how? An analysis of engagement with a texting adjunct for psychotherapy.* Journal of Telemedicine and e-Health. (2020)

O. DeMasi, A. Paxton, and K. Koy *Ad Hoc Efforts for Advancing Data Science Education* PLOS Computational Biology. (2020)

O. DeMasi, M. Hearst, and B. Recht *Towards Augmenting Crisis Counselor Training by Improving Message Retrieval* NAACL workshop on Computational Linguistics and Clinical Psychology. (2019)

O. DeMasi, K. Kording, and B. Recht *Meaningless comparisons lead to false optimism in medical machine learning.* PLOS One. (2017) `http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0184604`

O. DeMasi, S. Feygin, A. Dembo, A. Aguilera, and B. Recht *Wellbeing Tracking via Smartphone Measured Activity and Sleep: Cohort Study.* JMIR Mhealth Uhealth. (2017) `http://dx.doi.org/10.2196/mhealth.7820`

O. DeMasi and B. Recht *An example of how false conclusions could be made with personalized health tracking and suggestions for avoiding similar situations.* Data for Good Exchange. (2017)

O. DeMasi and B. Recht *A Step Towards Quantifying When an Algorithm Can and Cannot Predict an Individual's Wellbeing.* Ubicomp Workshop on Mental Health: Sensing and Intervention. (2017)

A. Aguilera, E. Bruehlman-Senecal, O. DeMasi, P. Avila *Automated text messaging adjunct to CBT treatment increases attendance and reduces attrition.* JMIR. (2017) `http://www.jmir.org/2017/5/e148`

O. DeMasi, A. Aguilera, B. Recht *Detecting Change in Depressive Symptoms from Daily Wellbeing Questions, Personality, and Activity.* Wireless Health. (2016)

O. DeMasi, D. Mason, J. Ma *Understanding Communities via Hashtag Engagement: A Clustering Based Approach.* International Conference on Web and Social Media. (2016) **[Best paper nominee, 17% acceptance rate]**

O. DeMasi, J. Gonzalez, B. Recht, J. Demmel, *Using Bayesian Optimization for Hardware Design.* Workshop on Bayesian Optimization, NIPS. (2014) `http://bayesopt.github.io/papers/paper3.pdf`

A.R. Humphries, O. DeMasi, et al. *Dynamics of a Delay Differential Equation With Multiple State Dependent Delays.* DCDS-A. (2012) `http://www.math.mcgill.ca/humphries/research/papers/DCDS-A7.pdf`

Teaching

2017-2018 **Fung Fellowship for Wellness and Technology Innovations**, *School of Public Health, UC Berkeley.*
Teaching assistant to Jaspal Sandhu. Course focused on developing health and technology solutions with human-centered design.

2016 **Applications of Parallel Computing (graduate course)**, *Department of EECS, UC Berkeley.*
Teaching assistant to James Demmel.

2014 **Statistical Learning Theory (graduate course)**, *Departments of EECS and Statistics, UC Berkeley.*
Teaching assistant to Benjamin Recht.

2006-2009 **Grader and Tutor for various math courses**, *McGill University and Western Connecticut State University*.
Graded: Advanced Calculus (fall 2008), Numerical Analysis (fall 2009), Real Analysis (fall 2009). Tutored: McGill Help Desk, WCSU Tutoring Resource Center, WCSU Math Clinic.

Approved Protocols for Human Subject Research

2020 **Developing a Dialogue System to Augment Crisis Counselor Training**, *Lead*.
Proposal to test a developed multi-persona chatbot to with trained counselors.

2018 **Developing a Dialog System to Augment SMS Helpline Counselor Training**, *Student Investigator*.
PI: Benjamin Recht, EECS. Three part proposal: First work with participants to collect and label data. Second build a training system with the collected data. Third, test the system through a user study.

2017 **Complementing the classroom: Advancing data science education through ad hoc efforts.**, Student Investigator.
PI: Cathryn Carson, History. Proposed surveying leaders of extracurricular data science education efforts to extract lessons learned for designing and hosting future sessions.

2015 **Mood, Personality and Decision-making using Smartphones**, *Personnel*.
PI: Shachar Kariv, Economics. Proposed collecting mobile phone data with UC Berkeley undergraduate students to explore the potential for passively sensed mood monitoring and decision making.

Mentoring and Outreach

2020 **Master's student**, *Mentor*.
Siddhartha Punj
"Increasing persona in open-domain generated chats."

2018 **Undergraduate research assistants**, *Mentor*.
Cassie Zhang and Vincent Bartle
"Developing a Training System for Suicide Prevention Helpline Counselors."

2017-2018 **Undergraduate independent research**, *Mentor*.
Amit Talreja
"Evaluating a baseline system for dialogue responses with context."

2016-2017 **Berkeley Institute for Data Science - Data Science Collaborative**, *Mentor*.
Alyssa Albarez, Amy Hu, Pearl Tsang, and Ningrui Zhang
"Visualizing mental health crises calls to the Berkeley Police Department."

2016-2017 **Berkeley Institute for Data Science - Data Science Collaborative**, *Mentor*.
Yiran Jia, Andrew Linxie, Clement Ng, Danica Tanquilut
"Understanding use of Mental Health Related Subreddits."

2016 **Berkeley Institute for Data Science - Data Science Collaborative**, *Mentor*.
Melody Huang and Vinay Satish
"Using smartphone Bluetooth and GPS signals to predict emotional wellbeing."

2015, 2016 **Graduate Pathways Symposium**, *Mentor*, UC Berkeley.
Mentored a junior undergraduate student to develop summer experiences and consider graduate education and a senior student through the graduate application process.

2015 **Black Girls Code**, *Tech Instructor*.
Lead classroom of middle school students through building a JavaScript game.

2012, 2014, 2015 **Technovation**, *Mentor.*
Guided 4 teams of high school girls through the Technovation Challenge, which seeks to inspire grade school girls to work in technology and entrepreneurship through building smartphone applications.

2013 **Spark apprenticeship program**, *Mentor.*
Guided a middle school student through a process of designing and building her own website.

2010-2011 **Lawrence Berkeley National Laboratory**, *Associate mentor.*
Alvin Peralta Betancourt, Dinorah Carrion, Elvin Mendez Sotomayor, Mark Woods
Posters accepted to the Tapia conference (2011), AGMUS Undergraduate Research Symposium (best pre-college poster presentation, 2010), and 68th Joint NIS/BKX Meeting (2011)

Academic Service

2021 **Workshop organization**, ICLR workshop on neural conversational agents.

2020 **Reviewer**, EMNLP.

2018-2019 **Working group lead**, Berkeley Institute for Data Science Diversity and Inclusion Working Group.
We strive to increase diversity and promote inclusion within data science at UC Berkeley and the Open Source Software community. Together we designed and organized a workshop series to encourage and support under-represented undergraduates pursue data science.

2016-2018 **Reviewer**, JMIR, GigaScience, Ubicomp workshops on sensing for mental health.

2016-2017 **Co-president**, Women in Computer Science and Electrical Engineering (WICSE).
Computer Science co-president leading networking, promotion, and outreach for women in EE and CS organization.

2018 **Working group member**, Education and Training Working Group.
Group at the Berkeley Institute for Data Science focused on expanding data science education.

2015-2016 **Industrial Liaison**, Women in Computer Science and Electrical Engineering.
Worked with industrial partners to fund WICSE's outreach efforts to get women in STEM.

2014-2015 **Treasurer**, Women in Computer Science and Electrical Engineering (WICSE).
Managed funds for the the WICSE organization, which fosters the social and professional development of women in the EECS department.