Dan Adler

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EDUCATION

Doctor of Philosophy   2019-Present
Cornell University, expected graduation May 2025
Information Science. Advisor: Tanzeem Choudhury, PhD
Master of Science awarded in May 2022 at admission to Candidacy
2021 National Science Foundation Graduate Research Fellow
2022-23 Digital Life Initiative Doctoral Fellow

Bachelor of Science   2016
The Johns Hopkins University
Biomedical Engineering (BME) and Applied Mathematics and Statistics (AMS), minor in Computer Science (CS), specializations in computational biology and optimization

RESEARCH

Value-based Mental Healthcare to Maximize Patient Outcomes
Future value-based mental healthcare programs will create payment incentives for health systems to maximize patient outcomes. Currently, there do not exist an agreed upon set of mental health outcome measures that can be used in these programs. In this study, we are conducting interviews and participatory design workshops with mental health clinicians to negotiate these outcome measures.

Equity in Digital Mental Health Measurement
Over the past decade, researchers have used AI models to identify links between digital data (eg, GPS-derived mobility) and mental health symptoms in small populations. It remains difficult to collect large datasets and ensure "model equity": fair and accurate performance across diverse patients over time. In this work, we aim to design solutions to improve model equity and digital mental health measures.

Implementing Digital Mental Health Measures
Despite the promise of digital data to provide contextual information on patients in-between clinical encounters, the implementation of digital measures in clinical mental healthcare remains unclear. In this work, we are interviewing stakeholders delivering mental health services to understand the potential implementation of these tools.

Quantitative Methods: programming (Python, R, Java, C++, Matlab), Excel, data visualization, machine learning (model training, feature engineering, validation, auditing), statistical modeling, simulation modeling, linear and non-linear optimization, networks

Qualitative Methods: user-centered design, prototyping, speculative design, participatory design, semi-structured interviewing, qualitative coding, thematic analysis

WORK EXPERIENCE

Graduate Student Intern, UnitedHealth Group 2021-2022
Developed novel programs integrating near-continuous digital data streams (eg, wearable, smartphone data) into collaborative care settings for improved mental health risk stratification and treatment.

Educator, Coder Academy 2018-2019
Developed and taught computer science courses for adults interested in reskilling for careers in information technology.

Advisory Analytics Associate, PricewaterhouseCoopers 2016-2018
Drove large community investments by working with health systems to analyze their patient populations using public/proprietary datasets, machine learning and simulation.

SELECTED PUBLICATIONS

Daniel A. Adler, Caitlin A. Stamatis, Jonah Meyerhoff, David C. Mohr, Fei Wang, Gabriel J. Aranovich, Srijan Sen, and Tanzeem Choudhury. Measuring algorithmic bias to analyze the reliability of AI tools that predict depression risk using smartphone sensed-behavioral data. (In-review at npj Mental Health Research)

Jodie Nghiem*, **Daniel A. Adler***, Deborah Estrin, Cecilia Livesey, and Tanzeem Choudhury. 2023. Understanding Mental Health Clinicians' Perceptions and Concerns Regarding Using Passive Patient-generated Health Data for Clinical Decision Making: a Qualitative, Semi-structured Interview Study. 7, 1: e47380. `https://formative.jmir.org/2023/1/e47380`
* *Indicates equal contribution.*

Daniel A. Adler*, Emily Tseng*, Khatiya C. Moon, John Q. Young, John M. Kane, Emanuel Moss, David C. Mohr, and Tanzeem Choudhury. 2022. Burnout and the Quantified Workplace: Tensions around Personal Sensing Interventions for Stress in Resident Physicians. Proc ACM Hum-Comput Interact. 6, CSCW2: 430:1-430:48. `https://dl.acm.org/doi/10.1145/3555531`
* *Indicates equal contribution, listed alphabetically in order by last name.*

Daniel A. Adler, Fei Wang, David C. Mohr, and Tanzeem Choudhury. 2022. Machine learning for passive mental health symptom prediction: Generalization across different longitudinal mobile sensing studies. PLOS ONE 17, 4: e0266516. `https://doi.org/10.1371/journal.pone.0266516`

Daniel A. Adler, Fei Wang, David C. Mohr, Deborah Estrin, Cecilia Livesey, and Tanzeem Choudhury. 2022. A call for open data to develop mental health digital biomarkers. BJPsych Open 8, 2. `https://doi.org/10.1192/bjo.2022.28`

Daniel A. Adler, Vincent W.-S. Tseng, Gengmo Qi, Joseph Scarpa, Srijan Sen, and Tanzeem Choudhury. 2021. Identifying Mobile Sensing Indicators of Stress-Resilience. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 5, 2: 51:1-51:32. `https://doi.org/10.1145/3463528`

Daniel A Adler, Dror Ben-Zeev, Vincent W-S Tseng, et al. 2020. Predicting Early Warning Signs of Psychotic Relapse From Passive Sensing Data: An Approach Using Encoder-Decoder Neural Networks. JMIR mHealth and uHealth 8, 8: e19962. `https://doi.org/10.2196/19962`

SELECTED INVITED TALKS

Mental Health Digital Biomarkers: Moving from Research to Practice. Presented at the Cornell Tech Digital Life Initiative (DLI) Seminar. New York, NY. 9 March 2023. <u>Link to talk.</u>

Burnout and the Quantified Workplace: Tensions around Personal Sensing Interventions for Stress in Resident Physicians. Presented at the ACM Computer Supported Cooperative Work (CSCW) Conference. Virtual. 8-22 November 2022. <u>Link to talk.</u>

Are Mental Health Digital Biomarkers Reliable? Presented to the Alan Turing Institute Data Science for Mental Health Special Interest Group. Virtual. 21 July 2022. <u>Link to talk.</u>

Identifying Mobile Sensing Indicators of Stress-Resilience. Presented at the ACM Ubicomp Conference. Atlanta, GA. 14 September 2022. <u>Link to short talk.</u>

HONORS & AWARDS

Cornell Machine Learning in Medicine Symposium "Best Poster" Award, Fall 2022
Cornell InfoSci Department Service Award, AY 2021-2022
Johns Hopkins University Honors, Spring 2016
Biomedical Engineering Departmental Honors, Spring 2016
Applied Mathematics and Statistics Departmental Honors, Spring 2016
Biomedical Engineering Richard J. Johns Award, Spring 2016
Applied Mathematics and Statistics Mathematical Modeling Award, Spring 2015

LEADERSHIP

8th Annual UbiComp Mental Health Workshop Co-leader, 2023
7th Annual UbiComp Mental Health Workshop Co-organizer, 2022
KDD 2022 Health Day Program Committee, 2022
PhDs at Cornell Tech (PACT) Hiring Committee Officer, 2022
Big Brothers Big Sisters (BBBS) of NYC Big, 2021-2022
Cornell InfoSci Grad. Student Association Admissions Representative, 2020-2021
Tau Beta Pi Maryland Alpha Chapter President, 2015-2016

TEACHING EXPERIENCE

Cornell Tech INFO 5610 Precision Behavioral Health Lead Instructor, Fall 2023
Cornell Tech INFO 5375 Machine Learning in Health TA, Spring 2022
Cornell Tech Masters Specialization Project Advisor, 2021 - 2023
Cornell Tech INFO 5610 Precision Behavioral Health TA, Fall 2020
Cornell Tech CS 5304 Data Science in the Wild TA, Spring 2020