

Dan Adler

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EDUCATION

PhD, Information Science, Computer Science Minor 2019-Present
Cornell University, Thesis Committee: Tanzeem Choudhury, PhD (Advisor and Chair), Deborah Estrin, PhD, Fei Wang, PhD

Researching methods for continuous mental health symptom monitoring and early intervention. Based at Cornell Tech in New York City.

Bachelor of Science, GPA 3.91/4.00 2016
The Johns Hopkins University

Double Major in Biomedical Engineering (BME) and Applied Mathematics and Statistics (AMS), minor in Computer Science (CS), specializations in computational biology and optimization.

PUBLICATIONS

(Submitted) **Adler D. A.**, Qi G., Tseng W., Scarpa J., Sen S., Choudhury T. Identifying Mobile Sensing Indicators of Stress-Resilience. *Submitted to Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*

Adler D. A., Ben-Zeev D., Tseng W., Kane J. M., Brian R., Campbell A. T., Hauser M., Scherer E. A., Choudhury T. (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. doi: 10.2196/19962

Kang S. K., Ammanuel S., **Adler D. A.**, Kadam S. D. (2020). Rescue of PB-resistant neonatal seizures with single-dose of small-molecule TrkB antagonist show long-term benefits. *Epilepsy Research*, 159, 106249. doi: 10.1016/j.eplepsyres.2019.106249

Kang S., Ammanuel S., Thodupunuri S., **Adler D. A.**, Johnston M. V., Kadam S. D. (2018). Sleep dysfunction following neonatal ischemic seizures are differential by neonatal age of insult as determined by qEEG in a mouse model. *Neurobiology of Disease*, 116, 1-12. doi: 10.1016/j.nbd.2018.04.012

Ammanuel S., Chan W. C., **Adler D. A.**, Lakshamanan B. M., Gupta S. S., Ewen J. B., Johnston M. V., Marcus C. L., Naidu S., Kadam S. D. (2015). Heightened Delta Power during Slow-Wave-Sleep in Patients with Rett Syndrome Associated with Poor Sleep Efficiency. *PLoS ONE*, 10(10): e0138113. doi: 10.1371/journal.pone.0138113

Adler D. A., Ammanuel S., Lei J., Dada T., Borbiev T., Johnston M., Kadam S. D., Burd I. (2014). Circadian cycle dependent EEG biomarkers of pathogenicity in adult mice following prenatal exposure to in utero inflammation. *Neuroscience*, 275, 305–313. doi: 10.1016/j.neuroscience.2014.06.022

ACADEMIC TALKS

Developing Generative Adversarial Networks to Predict Individual-Level Mental Health Symptoms. Presented at the Cornell Artificial Intelligence Seminar, 25 Sept. 2020.

Predicting Indicators of Resilience Using Wearables and Smartphones. Presented at the Cornell Information Science Seminar, 15 Sept. 2020.

A System for Predicting Relapse in Schizophrenia Spectrum Disorders. Presented at the Precision Behavioral Health Virtual Launch at Cornell Tech, 14 Sept. 2020.

ONGOING RESEARCH

Cross-Dataset Mental Illness Symptom Prediction

PIs: Tanzeem Choudhury, PhD, Deborah Estrin, PhD (Cornell Tech), Fei Wang, PhD (Cornell University), David Mohr, PhD (Northwestern University)

Over the past decade, multiple behavioral datasets have been collected from individuals' smartphones to predict symptoms of mental illness. We have yet to understand whether these datasets could be combined to improve symptom prediction, and if this combined model can be leveraged for online symptom prediction in newly collected data. This study aims to understand if cross-dataset mental illness symptom prediction is possible and useful for clinical decision support systems.

Identifying Mobile Sensing Indicators of Stress-Resilience

PIs: Tanzeem Choudhury, PhD (Cornell Tech), Srijan Sen, MD, PhD (University of Michigan)

Resilience can prevent mental health decline when individuals are undergoing extreme, prolonged stress. Assessment for stress-resilience is difficult. In this work, we analyzed whether behavioral and physiological data collected from Fitbit devices could be used to find indicators of stress-resilience. We specifically found indicators of stress-resilience in a population of medical interns. This work is currently submitted for publication in ACM IMWUT.

Techniques to Improve Mental Health Prediction with Multimodal Data

PIs: Tanzeem Choudhury, PhD (Cornell Tech), Fei Wang, PhD (Cornell University)

Predicting mental health symptoms from multimodal smartphone data at scale is challenging. Devices within populations are heterogeneous (eg, iPhone vs. Android), and data quality within individuals can be poor (eg, missingness). In this project, we are creating techniques to improve symptom prediction accuracy despite heterogeneity and low quality data.

Understanding Resident Physicians' Perceptions of Monitoring Burnout

PIs: Tanzeem Choudhury, PhD (Cornell Tech), John Kane, MD, John Young, MD (Northwell Health)

Resident physicians work within psychologically demanding environments, which creates prolonged stress. This prolonged stress leads to burnout: characterized by emotional exhaustion, detachment, and reduced sense of accomplishment. In this study, we are conducting semi-structured interviews with resident physicians to explore resident' attitudes and concerns regarding using technology to monitor burnout.

HONORS & AWARDS

Johns Hopkins University Honors, Spring 2016

Biomedical Engineering Departmental Honors, Spring 2016

Applied Mathematics and Statistics Departmental Honors, Spring 2016

Dean's List, Fall 2012 - Spring 2016

Biomedical Engineering Richard J. Johns Award, Spring 2016

Applied Mathematics and Statistics Mathematical Modeling Award, Spring 2015

TEACHING EXPERIENCE

Cornell Tech Masters Specialization Project Advisor, Fall 2020, Spring 2021, Fall 2021

Cornell Tech INFO 5610 Precision Behavioral Health, Fall 2020

Cornell Tech CS 5304 Data Science in the Wild, Spring 2020

Coder Academy Australia Post Tech Academy, Intro to Python and Machine Learning, 2019

PwC R Bootcamp, Spring 2017, Python Bootcamp, Fall 2017, Spring 2018

TEALS, Microsoft Philanthropies Introduction to Computer Science, Fall 2017, Spring 2018

Johns Hopkins BME 580.222 Signals, Systems and Controls, Spring 2016

Johns Hopkins AMS 550.111 Statistical Analysis 1, Fall 2015

PRIOR INDUSTRY AND RESEARCH EXPERIENCE

Educator & Course Developer

2018-2019

Coder Academy

- Developed and taught a two-year technology innovation boot camp for a large organization within Australia
- Created and taught data science courses and workshops to upskill adults on industry-relevant problems

Associate, Advisory Analytics

2016-2018

PricewaterhouseCoopers

- Drove large investments into community health by working with provider systems to analyze their patient populations using public/proprietary datasets, machine learning and simulation
- Worked on the creation of an application in PySpark hosted on a hadoop-environment to perform automated optimization and data mashing using a set of linear programming and k-nearest neighbor based algorithms
- Performed data cleaning and merging for a large pharmaceutical company to better track their product performance
- Investigated the use of an Agent Based Model (ABM) to assess the market potential for a new Pharmacogenomic (PGx) test

Researcher

2013-2014

Kennedy Krieger Neuroscience Department

- Researched the long-term effects of developmental brain injury using mouse models and patient EEGs

Researcher

2013

The Children's Hospital of Philadelphia Center for Autism Research (CAR)

- Analyzed the effects of biological reward on adults and children with and without Autism Spectrum Disorders (ASD) through preparing simulations and studying fMRI's

LEADERHIP

Cornell IS Grad. Student Association Admissions Representative, 2020-2021

Tau Beta Pi Maryland Alpha Chapter President, 2015-2016

Johns Hopkins Clinic Scheduling Team Leader, 2014-2016

THREAD Head of Family, 2015-2016

PROFESSIONAL ORGANIZATIONS

Tau Beta Pi Engineering Honors Society, 2014-Present

Upsilon Pi Epsilon Honor Society, 2016-Present