Tinashe Michael **Tapera**

PHD STUDENT IN PERSONAL HEALTH INFORMATICS

Northeastern University, Boston, MA

☎ +267 441 7206 | ✉ tinashemtapera@gmail.com | 🏠 tinashemtapera.com | TinasheMTapera | TinasheMTapera | 🐦 TaperaTinashe

I'm a PhD Student at Northeastern University, co-mentored by Varun Mishra and Stephen Intille. I study how to detect and intervene on mental health states using personal devices like mobile phones and smart watches.

Education

Northeastern University   *Boston, MA*

PHD PERSONAL HEALTH INFORMATICS   *Sep 2022 — May 2027*

Advisors: Varun Mishra, Stephen Intille

Drexel University   *Philadelphia, PA*

ACCELERATED MSC. PSYCHOLOGY (DATA ANALYSIS TRACK)   *Sep 2017 — Jun 2018*

- Thesis: Advanced Data Mining Methods for Psychological & Behavioral Research
- GPA: 3.70 (cum laude)

Drexel University   *Philadelphia, PA*

BSC. PSYCHOLOGY   *Sep 2013 — Jun 2017*

- GPA: 3.52
- A.J. Drexel Scholarship
- Dean's List

Professional Experience

UbiWell Lab, mHealth Lab, Northeastern University   *Boston, MA*

GRADUATE STUDENT   *Sep 2022 — Present*

- Interdisciplinary research at the intersection of mobile/wearable sensing, data science, human-centered computing, and behavioral science

ConcertAI   *Boston, MA*

DATA SCIENCE INTERN   *May 2024 — Oct 2024*

- Developed R Shiny Dashboard for pharmacovigilence of Adverse Events related to Multiple Myeloma medication exposure
- Investigated pharmacovigilence of Adverse Events using the novel Tree-Based Scan Statistic in R
- Ran ad-hoc & ETL data analysis tasks with MySQL, R-to-database interfaces, and Posit Connect

Penn Lifespan Informatics & Neuroimaging Center   *Philadelphia, PA*

SENIOR NEUROIMAGING DATA ANALYST   *Oct 2018 — Aug 2022*

- Developed data pipelines for ETL and analysis of large-scale neuroimaging data sets between data warehouses in Python, R, and Bash
- Preprocessed and analysed neuroimaging data using cutting-edge software (fMRIPrep, XCPEngine, QSIPrep, ASLPrep)
- Maintained and supported multiple data curation software packages in Python and R

Salesforce   *San Francisco, CA*

DATA SCIENCE INTERN   *May 2017 — Oct 2017*

- Focused on discovery of organizational insight using internal human resources data sets
- Developed a semi-supervised learning algorithm to track employee performance by matching topic models of continuous feedback and goal-setting data
- Investigated comorbidity of employees' insurance claims data to dynamically classify claim types and employee phenotypes

Research Experience

UbiWell Lab (Varun Mishra, PhD)   *Northeastern University*

"STRESSFREE: ASSESSING THE SCALABILITY & FEASIBILITY OF DIGITALLY PHENOTYPING STRESS"   *2022*

- Aim: Developing tools and software to identify moments of heightened stress in Northeastern undergraduate students, with the long term goal of delivering just-in-time interventions to relieve stress with mobile CBT approaches

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD)   *Drexel University*

"MOMENTARY CHANGES IN HEART RATE VARIABILITY CAN DETECT RISK FOR EMOTIONAL EATING EPISODES." *2015 — 2019*

- Aim: predicting emotional eating episodes in disordered eating patients using a combination of heart rate variability data and self-report

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD)   *Drexel University*

"APPLICATION OF ADVANCED DATA MINING MODELS TO IDENTIFY DIETARY PATTERNS ASSOCIATED WITH RISK OF CARDIOVASCULAR DISEASE."   *2015 — 2019*

- Aim: compare the performance of unsupervised feature selection (PCA/FA) against regularization (L1/L2) in predicting cardiovascular disease biomarkers from high-dimensional food and behaviour survey responses

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) — *Drexel University*

"Improved Modelling of Smartphone-based Ecological Momentary Assessment Data for Dietary Lapse Prediction."

2015 — 2019

- Aim: predicting dietary adherence lapses in participants using self-reported EMA

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) — *Drexel University*

"Identifying Autism Diagnostic Interview: Revised Algorithm Items that Significantly Distinguish Autism Spectrum Disorder and Down Syndrome."

2015 — 2019

- Aim: Identify phenotypic differences between children with autism spectrum disorder, down syndrome, and comorbid diagnoses using the Autism Diagnostic Interview-Revised (ADI-R)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) — *Drexel University*

"Modeling Zero-Inflated MVPA Bouts Using a Hierarchical Linear Modeling Framework"

2015 — 2019

- Aim: predict participants' moderate-to-vigorous physical activity (MVPA) bouts at timepoint 3 from previous timepoints using a zero-inflated Tweedie-Poisson regression model in a growth curve modeling context

Statistical and Applied Mathematical Sciences Institute (SAMSI) — *NC State University*

"Predicting multiple sclerosis (MS)"

2016

- Aim: classify participant diagnosis (MS patient vs control) using lesion count along the corpus callosum in a diffusion dataset

Laboratory for Innovations in Health-Related Behavior Change (Evan Forman, PhD) — *Drexel University*

"A Companion Smartphone App to Enhance Dietary Adherence through Predictive Machine Learning"

2015

- Aim: Data collection, cleaning, and summarization with Excel and SPSS

Publications

First-author

Flywheeltools: data curation and manipulation on the flywheel platform — *Frontiers in neuroinformatics*

TM Tapera, M Cieslak, M Bertolero, A Adebimpe, GK Aguirre, ER Butler, ... — *2021*

DOES ECOLOGICAL MOMENTARY ASSESSMENT DATA REFLECT BASELINE SELF-REPORT IN WEIGHT LOSS TREATMENT? — *ANNALS OF BEHAVIORAL MEDICINE*

TM Tapera, S Goldstein, BC Evans, E Forman — *2016*

Middle-author

Diffusion MRI head motion correction methods are highly accurate but impacted by denoising and sampling scheme — *Human Brain Mapping*

M Cieslak, PA Cook, G Shafiei, TM Tapera, H Radhakrishnan, M Elliott, ... — *2024*

Functional connectivity development along the sensorimotor-association axis enhances the cortical hierarchy — *Nature Communications*

AC Luo, VJ Sydnor, A Pines, B Larsen, AF Alexander-Bloch, M Cieslak, ... — *2024*

Development of top-down cortical propagations in youth — *Neuron*

A Pines, AS Keller, B Larsen, M Bertolero, A Ashourvan, DS Bassett, ... — *2023*

Development of white matter fiber covariance networks supports executive function in youth — *Cell reports*

J Bagautdinova, J Bourque, VJ Sydnor, M Cieslak, AF Alexander-Bloch, ... — *2023*

ModelArray: An R package for statistical analysis of fixel-wise data — *Neuroimage*

C Zhao, TM Tapera, J Bagautdinova, J Bourque, S Covitz, RE Gur, ... — *2023*

Developmental coupling of cerebral blood flow and fMRI fluctuations in youth — *Cell reports*

EB Baller, AM Valcarcel, A Adebimpe, A Alexander-Bloch, Z Cui, RC Gur, ... — *2022*

ASLPrep: a platform for processing of arterial spin labeled MRI and quantification of regional brain perfusion — *Nature methods*

A Adebimpe, M Bertolero, S Dolui, M Cieslak, K Murtha, EB Baller, ... — *2022*

Curation of BIDS (CuBIDS): A workflow and software package for streamlining reproducible curation of large BIDS datasets — *NeuroImage*

S Covitz, TM Tapera, A Adebimpe, AF Alexander-Bloch, MA Bertolero, ... — *2022*

Mobile footprinting: linking individual distinctiveness in mobility patterns to mood, sleep, and brain functional connectivity — *Neuropsychopharmacology*

CH Xia, I Barnett, TM Tapera, A Adebimpe, JT Baker, DS Bassett, ... — *2022*

Spatially-enhanced clusterwise inference for testing and localizing intermodal correspondence

NeuroImage

SM Weinstein, SN Vandekar, EB Baller, D Tu, A Adebimpe, TM Tapera, …

2022

QSIPrep: an integrative platform for preprocessing and reconstructing diffusion MRI data

Nature methods

M Cieslak, PA Cook, X He, FC Yeh, T Dhollander, A Adebimpe, …

2021

A simple permutation-based test of intermodal correspondence

Human brain mapping

SM Weinstein, SN Vandekar, A Adebimpe, TM Tapera, …

2021

Developmental coupling of cerebral blood flow and fMRI fluctuations in youth

BioRxiv

EB Baller, AM Valcarcel, A Adebimpe, A Alexander-Bloch, Z Cui, RC Gur, …

2021

ASLPrep: a generalizable platform for processing of arterial spin labeled MRI and quantification of regional brain perfusion

BioRxiv

A Adebimpe, M Bertolero, S Dolui, M Cieslak, K Murtha, EB Baller, …

2021

Mobile footprinting: linking individual distinctiveness in mobility patterns to mood, sleep, and brain functional connectivity

BioRxiv

CH Xia, I Barnett, TM Tapera, Z Cui, TM Moore, A Adebimpe, …

2021

Mapping Physiology-Function Coupling in Youth

Biological Psychiatry

E Baller, A Adebimpe, A Valcarel, A Alexander-Bloch, Z Cui, J Detre, …

2021

Momentary changes in heart rate variability can detect risk for emotional eating episodes

Appetite

AS Juarascio, RJ Crochiere, TM Tapera, M Palermo, F Zhang

2020

QSIPrep: An integrative platform for preprocessing and reconstructing diffusion MRI

Biorxiv

M Cieslak, PA Cook, X He, FC Yeh, T Dhollander, A Adebimpe, …

2020

Autism spectrum disorder (ASD) symptom profiles of children with comorbid Down syndrome (DS) and ASD: A comparison with children with DS-only and ASD-only

Research in Developmental Disabilities

M Godfrey, S Hepburn, DJ Fidler, T Tapera, F Zhang, CR Rosenberg, …

2019

Application of a new dietary pattern analysis method in nutritional epidemiology

BMC medical research methodology

F Zhang, TM Tapera, J Gou

2018

A PRELIMINARY INVESTIGATION OF A PERSONALIZED RISK ALERT SYSTEM FOR WEIGHT CONTROL LAPSES

ANNALS OF BEHAVIORAL MEDICINE

E Forman, S Goldstein, B Evans, S Manasse, A Juarascio, M Butryn, …

2016

IS PROMPTING PROBLEMATIC?: CONSIDERATIONS FOR LONG-TERM ECOLOGICAL MOMENTARY ASSESSMENT

ANNALS OF BEHAVIORAL MEDICINE

SP Goldstein, BC Evans, TM Tapera, E Forman, S Manasse, A Juarascio, …

2016

Software & Project Contributions

FlywheelTools

10.5281/zenodo.4752798

A SUITE OF SOFTWARE TOOLS FOR CURATING YOUR NEUROIMAGING DATA INTO BIDS ON FLYWHEEL

2021

R, Python, MongoDB, RMarkdown Reports, Docker

PC Dashboard

10.5281/zenodo.5721127

AN INTERACTIVE ANALYTICS DASHBOARD FOR THE DREXEL UNIVERSITY PEER COUNSELING HELPLINE

2017

• R, Shiny, Qualtrics API

Teaching Experience

Teaching Assistant

2018   MSc. Psychology — Statistics I & II

Drexel University

Service

2022 to present	Member, Mentor	*R 4 Data Science Community (R4DS.io)*
2013 to 2021	Member, Alumni Mentor	*Drexel University Gospel Choir*
2013 to 2018	Peer Counselor, VP of Scheduling & Communications	*Drexel University Peer Counseling Helpline*

Skills

Analytical

Data Science, Statistical Modelling, Reproducible Research, Parameterized & Interactive Reports, Plotting & Visualisation, Object-Oriented Programming

Programming languages

R, Python, Bash, MySQL

Packages

Tidyverse, RMarkdown/Quarto, ggplot2, Shiny, Tidymodels, Github Pages, nilearn

Tools

Git, Docker, Singularity, RStudio, Positron, VSCode, Jupyter, CircleCI