

Tinashe Michael **Tapera**

RESEARCH SOFTWARE ENGINEER AT HARVARD UNIVERSITY

Harvard University, Boston, MA

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I'm a Research Software Engineer at Harvard University in the Golden Planetary Health Lab and National Studies on Air Pollution & Health (NSAPH). I write software that makes science happen by developing high-throughput ETL data pipelines, distributing accessible research software packages, and providing documentation and support for best practices in data science at Harvard.

Education

Northeastern University

MSC HEALTH INFORMATICS

Boston, MA

- Capstone: TBD

Sep 2022 — May 2026

Drexel University

ACCELERATED MSC. PSYCHOLOGY (DATA ANALYSIS TRACK)

Philadelphia, PA

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

Sep 2017 — Jun 2018

Drexel University

BSc. PSYCHOLOGY

Philadelphia, PA

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

Sep 2013 — Jun 2017

Professional Experience

Golden Planetary Health Lab, National Studies on Air Pollution & Health, Harvard University

Boston, MA

RESEARCH SOFTWARE ENGINEER

Feb 2025 — Present

- Support interdisciplinary research at the intersection of climate science, public health, and data science.
- Develop scalable, reproducible software solutions for high throughput data ETL and harmonization pipelines from various diverse sources
- Deploy robust and well-documented software packages to seamlessly interface with small- to large-scale harmonized data sources

ConcertAI

Boston, MA

DATA SCIENCE INTERN

May 2024 — Oct 2024

- Delivered Real World Data (RWD) oncology data products leveraging curated data, unstructured EMR, and claims records
- Deployed R Shiny Dashboard for pharmacovigilance of Adverse Drug Events related to Multiple Myeloma treatment
- Analyzed Adverse Events using the Tree-Based Scan Statistic data mining method

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, XCP Engine, 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

Reproducible Brain Charts: An open data resource for mapping brain development and its associations with mental health

Neuron

G SHAFIEI, NB ESPER, MS HOFFMANN, L AI, AA CHEN, J CLUCE, S COVITZ, ...

2025

Functional connectivity development along the sensorimotor-association axis enhances the cortical hierarchy

Nature communications

AC LUO, VJ SYDNR, A PINES, B LARSEN, AF ALEXANDER-BLOCH, M CIESLAK, ...

2024

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
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
Refinement of Functional Connectivity in Development Aligns with the Sensorimotor to Association Axis	OSF
A LUO, V SYDNOR, AS KELLER, A ALEXANDER-BLOCH, M CIESLAK, S COVITZ, ...	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

F ZHANG, TM TAPERA, J GOU

BMC medical research methodology

2018

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

E FORMAN, S GOLDSTEIN, B EVANS, S MANASSE, A JUARASCIO, M BUTRYN, ...

ANNALS OF BEHAVIORAL MEDICINE

2016

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

SP GOLDSTEIN, BC EVANS, TM TAPERA, E FORMAN, S MANASSE, A JUARASCIO, ...

ANNALS OF BEHAVIORAL MEDICINE

2016

Software & Project Contributions

FlywheelTools

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

10.5281/zenodo.4752798

2021

- R, Python, MongoDB, RMarkdown Reports, Docker

PC Dashboard

AN INTERACTIVE ANALYTICS DASHBOARD FOR THE DREXEL UNIVERSITY PEER COUNSELING HELPLINE

10.5281/zenodo.5721127

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)
2025 to present	Newsletter Editor	US Research Software Engineering Association
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, NOTEBOOK-DRIVEN DEVELOPMENT

Programming languages

R, PYTHON, BASH

Databases

MySQL, MongoDB

Packages

TIDYVERSE, RMARKDOWN/QUARTO, GG PLOT2, SHINY, TIDYMODELS, GITHUB PAGES, NILEARN

Tools

GIT, DOCKER, SINGULARITY, RSTUDIO, POSITRON, VS CODE, JUPYTER, CIRCLECI