

Tinashe Michael Tapera

SENIOR NEUROIMAGING DATA ANALYST

Philadelphia, Pennsylvania

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I'm an aspiring graduate student seeking PhD opportunities at the intersection of passive sensing, mental health, and data science.

Education

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

Penn Lifespan Informatics & Neuroimaging Center

Philadelphia, PA

SENIOR NEUROIMAGING DATA ANALYST

Oct 2018 — Present

- Develop data pipelines for ETL (extract-transform-load) of large-scale imaging data sets between data warehouses in Python, R, and Bash
- Preprocess and analyse neuroimaging data using cutting-edge software (fMRIPrep, XCPEngine, QSIprep, ASLPrep)
- Actively maintain and support 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

Arzoo LLC

Philadelphia, PA

PRIVATE EQUITY INTERN

Oct 2015 — Apr 2016

- Developed data munging pipelines in Excel for scraping business profile data

Research Experience

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
- Outcome: Paper published in *Appetite* (2019)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD)

Drexel University

"APPLICATION OF ADVANCED DATA MINING MODELS TO IDENTIFY DIETARY PATTERNS ASSOCIATED WITH RISK OF

2015 — 2019

CARDIOVASCULAR DISEASE."

- 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
- Outcome: Master's thesis topic (2018)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD)

Drexel University

"IMPROVED MODELLING OF SMARTPHONE-BASED ECOLOGICAL MOMENTARY ASSESSMENT DATA FOR DIETARY LAPSE

2015 — 2019

PREDICTION."

- Aim: predicting dietary adherence lapses in participants using self-reported EMA
- Outcome: Neighbourhood-Based Balancing — A Novel Semi-Supervised Classification Algorithm for Imbalanced Data ("5-Minute Thesis", themed talk at the Well Center Symposium 2018)

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)
- Outcome: Paper published in Research in Developmental Disabilities (2019)

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
- Outcome: Final paper submitted in CFTP758 — Dyadic Analysis and Longitudinal Causal Modeling

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
- Outcome: Successfully predicted MS diagnosis using 3 different logistic regression segmentation approaches with 81% classification accuracy

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

TAPERA, T. M., CIESLAK, M., BERTOLERO, M., ADEBIMPE, A., ..., SATTERTHWAITE, T. D.

2021

- <https://doi.org/10.3389/fninf.2021.678403>

Middle-author

A simple permutation-based test of intermodal correspondence

Human Brain Mapping

WEINSTEIN, S. M., VANDEKAR, S. N., ADEBIMPE, A., TAPERA, T. M., ..., SHINOHARA, R. T.

2021

- <https://doi.org/10.1002/hbm.25577>

Mobile Footprinting: Linking Individual Distinctiveness in Mobility Patterns to Mood, Sleep, and Brain Functional Connectivity

Under Review

XIA, C. HUCHUAN, BARNETT, I., TAPERA, T., CUI, Z., ..., SATTERTHWAITE, T. D.

2021

- <https://doi.org/10.1101/2021.05.17.444568>

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

Nature Methods

CIESLAK, M., COOK, P. A., HE, X., YEH, F., DHOLLANDER, T., ADEBIMPE, A., AGUIRRE, G. K., BASSETT, D. S., BETZEL, R. F., BOURQUE, J., CABRAL, L. M., DAVATZIKOS, C., DETRE, J. A., EARL, E., ELLIOTT, M. A., FADNAVIS, S., FAIR, D. A., FORAN, W., FOTIADIS, P., GARYFALLIDIS, E., GIESBRECHT, B., GUR, R. C., GUR, R. E., KELZ, M. B., KESHAVAN, A., LARSEN, B. S., LUNA, B., MACKEY, A. P., MILHAM, M. P., OATHES, D. J., PERRONE, A., PINES, A. R., ROALF, D. R., RICHIE-HALFORD, A., ROKEM, A., SYDNOR, V. J., TAPERA, T. M., ..., SATTERTHWAITE, T. D.

2021

- <https://doi.org/10.1038/s41592-021-01185-5>

Developmental coupling of cerebral blood flow and fMRI fluctuations in youth

Under Review

BALLER, E. B., VALCARCEL, A. M., ADEBIMPE, A., ALEXANDER-BLOCH, A., CUI, Z., GUR, R. C., GUR, R. E., LARSEN, B. L., LINN, K. A., O'DONNELL, C. M., PINES, A. R., RAZNAHAN, A., ROALF, D. R., SYDNOR, V. J., TAPERA, T. M., ..., SATTERTHWAITE, T. D.

2021

- <https://doi.org/10.1101/2021.07.28.454179>

Mapping Physiology-Function Coupling in Youth

Biological Psychiatry

BALLER, E., ADEBIMPE, A., VALCAREL, A., ALEXANDER-BLOCH, A., CUI, Z., DETRE, J., GUR, R., GUR, R., LARSEN, B., LINN, K., O'DONNELL, C., RAZNAHAN, A., ROALF, D., TAPERA, T., ..., SATTERTHWAITE, T.

2021

- <https://doi.org/10.1016/j.biopsych.2021.02.445>

ASLPrep: A Generalizable Platform for Processing of Arterial Spin Labeled MRI and Quantification of Regional Brain Perfusion

Under Review

ADEBIMPE, A., BERTOLERO, M., DOLUI, S., CIESLAK, M., MURTHA, K., BALLER, E. B., BOEVE, B., BOXER, A., BUTLER, E. R., COOK, P., COLCOMBE, S., COVITZ, S., DAVATZIKOS, C., DAVILA, D. G., ELLIOTT, M. A., FLOUNDERS, M. W., FRANCO, A. R., GUR, R. E., GUR, R. C., JABER, B., McMILLIAN, C., MILHAM, M., MUTSAERTS, H. J.M.M., OATHE, D. J., OLM, C. A., PHILLIPS, J. S., TACKETT, W., ROALF, D. R., ROSEN, H., TAPERA, T. M., ..., AND, T. D. SATTERTHWAITE
• <https://doi.org/10.1101%2F2021.05.20.444998>

2021

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

Appetite

JUARASCIO, A. S., CROCHIERE, R. J., TAPERA, T. M., PALERMO, M., ZHANG, F.
• <https://doi.org/10.1016%2Fj.appet.2020.104698>

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

GODFREY, M., HEPBURN, S., FIDLER, D. J., TAPERA, T., ..., LEE, N. RAITANO
• <https://doi.org/10.1016%2Fj.ridd.2019.03.003>

2019

Application of a new dietary pattern analysis method in nutritional epidemiology

BMC Medical Research Methodology

ZHANG, F., TAPERA, T. M., GOU, J.

2018

• <https://doi.org/10.1186%2Fs12874-018-0585-8>

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

2013 to Present 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

Packages

TIDYVERSE, RMARKDOWN, GGLOT2, GITHUB PAGES, NILEARN

Tools

GIT, DOCKER, SINGULARITY, RSTUDIO, VSCODE, JUPYTER NOTEBOOKS, CIRCLECI