Tinashe Michael Tapera, BSc

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EDUCATION

Drexel University — September 2013 - June 2017
Bachelor of Science in Psychology — Philadelphia, PA
Graduating GPA: 3.51 (Cum Laude)

Drexel University — September 2016 - Present
Accelerated Master of Science in Psychology — Philadelphia, PA
Behavioral Data Analysis Concentration
Graduate Minor in Computer Science
Anticipated date of graduation: June 2018

St. John's College — 2007 - 2012
International Baccalaureate Diploma Program — Harare, Zimbabwe
Higher level: Physics, Business Studies, English
Standard level: Mathematics, Chemistry, French
32 points

HONORS AND AWARDS

Drexel University

Statistical and Mathematical Sciences Institute Undergraduate Travel Award	2016
College of Arts & Sciences Humanities Fellowship in Psychology	2015
Dean's List	Multiple
A. J. Drexel Academic Scholarship	2013 - 2017

St. John's College

Athene Cup for Cultural Person of the Year	2012

PROFESSIONAL ORGANIZATIONS

American Statistical Association (ASA) Member and Mentee
Eastern North American Region of the International Biometrics Society (ENAR) Member
Society of Behavioral Medicine (SBM) Member
Phi Eta Sigma National Honors Society Member
Drexel University Gospel Choir Member

RESEARCH EXPERIENCE

Quantitative Psychology & Statistics Laboratory 2015 - Present
Graduate Research Assistant Drexel University
Supervisor: Fengqing Zoe Zhang, PhD

- Investigate data mining and machine learning models for data-intensive research in psychology, neuropsychology, and epidemiology.

- "Application of Advanced Data Mining Models to Identify Dietary Patterns Associated with Risk of Cardiovascular Disease."
  - Data sourced from National Health and Nutrition Examination Survey.
  - Aimed to predict levels of cardiovascular disease biomarkers (e.g. cholesterol) using high-dimensional food and behaviour survey responses.
  - Employed principal components analysis, linear regression, and LASSO regression.
  - Achieved adjusted R^2 of over 0.85 for all biomarkers using LASSO approach.

- "Improved Modelling of Smartphone-based Ecological Momentary Assessment Data for Dietary Lapse Prediction."
  - Ecological Momentary Assessment data sourced via periodic mobile app survey.
  - Aimed to predict when participants in dietary adherence study would lapse (i.e. cheat) on their diet by classifying survey responses into lapse or non-lapse probabilities.
  - Developed a novel algorithm for classification in the case of highly imbalanced classes:
    - Hypothesized a neighborhood-based approach to create small subsets of training data based on similarity to the test set observation.
    - Implemented individual classifiers for each subset and test observation employed ensemble rule evaluation for the resulting predictions.
    - Results show moderate improvements in specificity and sensitivity over existing data-balancing and ensemble rule techniques.

- "Identifying Autism Diagnostic Interview: Revised Algorithm Items that Significantly Distinguish Autism Spectrum Disorder and Down Syndrome."
  - Data gathered through Autism Diagnostic Review questionnaire (ADI-R), including participants diagnosed with Autism Spectrum Disorder, Down Syndrome, or both.
  - Aimed to infer critical diagnostic criteria for early detection and differentiation of diagnoses.
  - Built both dichotomous and multiclass models for prediction of diagnosis, employing methods such as logistic regression, LASSO, and classification & regression trees such as Random Forest.

- "Modelling Zero-Inflated Distributions in Bouted Physical Activity Data."
  - Data sourced from individual fitness trackers to measure amounts of moderate-to-vigorous physical activity.
  - Assumed zero-inflated compound Tweedie Poisson distribution would best model the change in trajectory of participants' MVPA bouts over time.
  - Achieved MSE of 11.98 using a fixed effects growth curve model to predict MVPA bouts.

SAMSI Interdisciplinary Undergraduate Workshop May 2016
Supervisors: Benjamin Risk, BS and Sujit Ghosh PhD NC State University

- Awarded $900 travel award to participate in the Statistical and Mathematical Sciences Institute Interdisciplinary Undergraduate Workshop 2016.
- Worked with a team of multidisciplinary students to predict multiple sclerosis diagnosis.
- Investigated statistical modelling of Diffusion Tensor Imaging data for MS patients in R and MATLAB.
- Loaded, cleaned, and explored datasets using statistical summaries and visualizations.
- Identified and engineered predictive features for multiple sclerosis diagnosis.
- Successfully modelled MS diagnosis using 3 different logistic regression approaches with 81% classification accuracy.

Laboratory for Innovations in Health-Related Behavior Change 2015
Supervisors: Evan Forman, PhD and Stephanie Goldstein BS Drexel University

- Data Manager: A Companion Smartphone App to Enhance Dietary Adherence through Predictive Machine Learning.
- Data collection, entry, and cleaning using Excel functions (text manipulation, LOOKUPs, case matching).
- Managed participant research and clinical files.
- Conducted in-person and phone assessments for data collection and in-person diagnostic interviewing.
- Independently investigated hypotheses on self-report and baseline measurement discrepancies using SPSS.

PUBLICATIONS

Zhang, F. Z., **Tapera, T. M.**, Goldstein. S.P., & Forman, E.M., (manuscript). Improved Modeling of Smartphone-based Ecological Momentary Assessment Data for Dietary Lapse Prediction.

Zhang, F. Z., **Tapera, T. M.**, & Gou, J.T.,(manuscript). Application of a New Dietary Pattern Analysis Model in Nutritional Epidemiology.

CONFERENCE PRESENTATIONS

Zhang, F. Z., **Tapera, T. M.**, Goldstein. S.P., Forman, E.M. (2018, March). Improved Modeling of Smartphone-based Ecological Momentary Assessment Data for Dietary Lapse Prediction. Talk to be presented at the ENAR Spring Meeting 2018, Atlanta, GA.

Godfrey, M., **Tapera, T. M.**, Zhang, F. Z., Lee, N (2018, February). Identifying Autism Diagnostic Interview- Revised Algorithm Items that Significantly Distinguish Autism Spectrum Disorder and Down Syndrome. Talk to be presented at the International Neuropsychological Society Conference, Washington, D.C.

Tapera, T. M., Ng, E., (2017, September). Using Natural Language Processing to Link Feedback & V2MOM Data. Talk presented at the Tech & Product Intern Demo Day at Salesforce HQ, San Francisco, CA.

Tapera, T. M., Zhang, F. Z., (2017, March). Application of Advanced Data Mining Models to Identify Dietary Patterns Associated with Risk of Disease. Poster presented at the ENAR Spring Meeting 2017, Washington, D.C.

Tapera, T. M., Goldstein, S.P., Evans, B., & Forman, E.M., (2016, April). Does Ecological Momentary Assessment Data Reflect Baseline Self-Report in Weight Loss Treatment? Poster presented at the 37th Annual Meeting and Scientific Sessions of the Society of Behavioral Medicine, Washington, D.C.

Forman, E.M., Goldstein. S.P., Evans, B., Manasse, S.M., Juarascio, A.S., Butryn, M.L., & **Tapera, T. M.**, (2016, April). A Preliminary Investigation of a Personalized Risk Alert System for Weight Control Lapses. In S.P. Goldstein (Chair), *Harnessing the Power of Predictive Learning to Promote Health Behavior Change: Developing and Testing Novel Technology.* Symposium presented at the 37th Annual Meeting and Scientific Sessions of the Society of Behavioral Medicine, Washington, D.C.

Goldstein, S.P., Evans, B., **Tapera, T. M.**, Forman, E.M., & Butryn, M.L., (2016, April). Is Prompting Problematic?: Considerations for Long-term Ecological Momentary Assessment? Poster presented at the 37th Annual Meeting and Scientific Sessions of the Society of Behavioral Medicine, Washington, D.C.

TEACHING EXPERIENCE

Psychology Graduate Statistics Sequence September 2017-Present
Teaching Assistant Drexel University
Supervisor: Karol Osipowicz, PhD

- Tutor 1st year Master's students in fundamental statistical procedures relevant to behavioural and social science research:
  - Central tendency and variability,
  - Probability and expectation,
  - Hypothesis testing,
  - Correlation and regression,
  - Chi-square, ANOVA, and variants,
  - Non-parametric tests.
- Direct laboratory sessions to allow students to practice and develop their skills.
- Host office hours to allow students to address lingering questions and concerns.

WORK EXPERIENCE

Salesforce June 2017-September 2017
Data Science Intern San Francisco, CA
Supervisor: Ernest Ng, PhD

- Focused on pioneering organizational insight from internal human resources data sets.
- Developed a semi-supervised learning algorithm for tracking employee performance by

matching topic models in ongoing feedback data and goal-setting data.
- Designed data processing pipelines for analyses in Python, Bash, and MySQL.
- Examined employee feedback patterns using various text mining techniques:
  - Parts-of-speech tagging,
  - Topic modelling,
  - Sentiment analysis.
- Investigated comorbidity of employees' claims data to dynamically classify claim types and profile employees.
- Carried out ad-hoc statistical investigations as requested.

Arzoo LLC October 2015 - April 2016
Private Equity Analyst Philadelphia, PA
Supervisors: Ahmed Makani, Megan Strouss-Rooney, MSW

- Scraped various online business databases to create large datasets of businesses (5000+ cases).
- Developed a smooth data munging pipeline in Excel using advanced functions to cut down data munging time for interns by 75%.
- Taught data preparation techniques to other interns using Excel templates.
- Analyzed cases using financial criteria and seller profile criteria to identify business owners with high potential to sell.
- Initiated negotiations with business owners by email, mail and by phone.

College of Arts & Sciences Marketing Department Present
Student Writer Drexel University
Supervisors: Diane Ketler, Amy Weaver

- Research potential articles for the CoAS monthly newsletter.
- Conduct face-to-face interviews with participants.
- Wrote and edited articles on informative events and news on campus.
- Published articles in large productions including Ask Magazine 2015.

Events & Conference Services 2016
Conference Assistant Drexel University
Supervisors: Nicole Sigda

- Co-ordinated checking-in and checking-out of guests throughout the summer term.
- Addressed conference guests' issues and requests with sublime customer service.
- Carried-out diligent round checks to ensure building is safe and secure.
- Liaised with Conference Assistant team to handle emergencies.

Homelux Properties 2014
Letting Clerk Harare, Zimbabwe
Supervisor: Matthew Machibaya

- Co-ordinated client introductions between potential tenants and landlords.
- Conducted multiple property viewings per day with potential tenants.
- Mediated negotiations between potential tenants and landlords, before and during

tenancy.
- Prepared and maintained legal lease agreements.
- Analyzed market value of new letting properties.
- Created advertisements for online property market on Classifieds.

RELEVANT SKILLS AND TOOLS

- Proficient R programming.
- Proficient Python programming.
- Proficient SPSS.
- Proficient Microsoft Office Suite.
- MATLAB, AppleScript, Unix, MySQL, Java programming.
- Titanium Database.
- Qualtrics Survey.
- IRB Certified and Compliant.
- Logic Pro X, Fruity Loops.
- Sharepoint Software.

VOLUNTEER EXPERIENCE

Peer Counseling Helpline 2014 - Present
Counselor, Vice President of Scheduling & Communications Drexel University
Supervisor: Scott Sokoloski, PhD

- Chair and record minutes for staff and board meetings.
- Manage ~30 counselors per term and co-ordinate staff shifts and meetings for the term.
- Serve on the board as a counselor liaison.
- Answer calls and counsel students through psychological and emotional distress.
- Analyzed Gmail archive in Python to establish insightful statistics and key performance indicators about the organization.
    - Applied topic modeling algorithms on call logs to classify call topics and caller profiles.

Daskalis Athletic Center 2014 - 2015
Club Athletics Assistant Trainer Drexel University
Supervisor: Kerri Gavin, MA, ATC

- Administered basic athlete care such as icing, strapping, and stretching.
- Assisted patients in regular physical rehabilitation exercises.
- Shadowed doctors as they diagnosed patients (Dr. Trojian, MD, Dr. Hong, MD)

RELEVANT COURSEWORK

Undergraduate

- Biological Basis of Behavior
- Physiological Psychology
- Neuropsychology
- Industrial/Organizational Psychology
- Experimental Psychology
- Psychological Testing & Assessment
- Dietary Behavior & Technology
- Machine Learning in Psychology
- Introduction to Data Science
- Multivariate Data Analysis
- Introduction to Computer Science
- Computer Programming I
- Computer Programming II
- Advanced Programming Techniques
- Mathematical Foundations of Computing

Graduate

- Research Methods I
- Research Methods II
- Cognitive Psychology
- Citizen Science
- Behaviour Analysis
- Statistical Data Analysis I
- Statistical Data Analysis II
- Statistical Data Analysis III: Advanced Topics
- Behavioural Data Mining
- Dyadic Analysis and Longitudinal Modeling
- Theoretical Computer Science Foundations
- Programming Foundations
- Advanced Programming Techniques

PROJECTS AND HOBBIES

Data Science:

- Quantitative Analysis of the Peer Counseling Helpline Gmail archive using Natural Language Processing techniques (Python);
- Investigating my sleeping habits using the Sleep Cycle app and my sleep data (R);
- Equivalence & Non-Inferiority Testing: an undervalued hypothesis testing approach (R);
- Kaggle Housing Prices Challenge (R);
- Solving the Knight's Tour problem (Python);
- A unix utility for banking (*nix);
- Automating scheduled emails (AppleScript);
- Confirmatory analysis of air quality data in the Philadelphia area (R);
- A semi-supervised learning algorithm for matching text documents from different corpuses (Salesforce internship).

Documentation available at github.com/TinasheMTapera.

Music:

15+ years of experience performing and composing; multiple instruments including lead, rhythm, and acoustic guitar; piano; rock drums; Scottish/Highland drums; vocals; and electronic music production. Samples available at soundcloud.com/tinashe-tapera.

REFERENCES

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