J. BLAKE BULLWINKEL

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EDUCATION

Harvard University, Cambridge, MA   Expected June 2022
M.S. in Data Science. GPA 3.93/4.0. Advisor: *Pavlos Protopapas*

Williams College, Williamstown, MA   June 2020
B.A. in Mathematics, Chinese. GPA 3.83/4.0 (*cum laude*)

University of Oxford, Oxford, UK   June 2019
Attended as a visiting student as part of the selective, year-long Williams-Exeter Program at Oxford.

PROFESSIONAL EXPERIENCE

PepsiCo R&D, *Data Science & Analytics Intern*   Summer 2021
• Developed Python package for anomaly detection of water usage time series using statistical and ML methods.
• Trained time series models (ARIMA, Facebook Prophet, LSTM) to forecast water efficiency of future weeks, lowering the mean validation RMSE across 17 beverage plants by 43% in comparison to a moving average baseline.
• Developed an automated data pipeline with actionable insights in Power BI that has been adopted nationwide.

Marble, *Co-Founder*   Summer 2020–Present
• Leading the development of a mobile app that provides carbon footprint estimates for 200,000+ grocery products.
• Team of three accepted into the 2021 Harvard i-lab Venture Program for three consecutive semesters (website).

Institute for Human and Machine Cognition, *Data Science Intern*   Jan 2020
• Used Python and PostgreSQL for cleaning, visualization, and analysis of flight simulation data.

Zola Electric, *Digital Platforms Intern*   Summer 2019
• Queried time series data using MySQL to identify transaction delays in solar electricity startup's software platform.

SELECTED PROJECTS

Harvard IQSS-Microsoft Collaboration on Differential Privacy   Sept 2021–Present
• Working with Microsoft data scientists to research fairness tradeoffs of differentially private data synthesis.
• Developing data pre-processing methods to mitigate bias of synthesizers in SmartNoise Python library.

GANs for Partial and Stochastic Differential Equations   Feb 2021–Present
• Researching and developing methods to improve the training stability of DEQGAN, a novel generative adversarial network for solving differential equations, and extending results to partial and stochastic equations (master's thesis).

DreamDiff Python Package   Dec 2020
• Led a team of three to develop a Python package that implements forward-mode automatic differentiation (PyPI).
• Added extensions for root-finding, optimization by gradient descent, quadratic splines, and visualization methods.

LEADERSHIP EXPERIENCE

Exeter College Boat Club, Oxford, UK, *Rowing Captain*   Spring 2019
• Elected to lead the Exeter College Boat Club as the men's rowing captain during year abroad at Oxford.

Williams College, Williamstown, MA, *Chinese Teaching Assistant*   2017–2020
• Selected by Chinese department to act as a salaried assistant to professors through 1:1 tutoring sessions.

HONORS AND AWARDS

IACS Student Scholarship to support data science thesis research ($20,000 award)   2021
Goldberg Prize in Mathematics for the best mathematics colloquium (department-wide senior prize)   2020
Linen Prize in Chinese for achieving distinction in Chinese (department-wide senior prize)   2020
Carolyn Korthals Altes Scholarship for academics and potential to contribute to society   2019
UWCSEA Class of '16 Graduation Student Speaker elected by peers to deliver student address   2016

SKILLS AND INTERESTS

Programming	Python (NumPy, pandas, sklearn, statsmodels, TensorFlow, PyTorch), R, SQL, HTML/CSS
Methods	Statistical machine learning, time-series analysis, stochastic methods, deep learning
Language	Working proficiency in written and spoken Chinese (Mandarin)
Interests	Rowing, photography, writing (Medium blog), Rubik's cube solving (WCA profile)