

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 and 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.
• Implemented a real-time warning system using stochastic models and automated actionable insights in Power BI.

Marble, *Co-Founder* Summer 2020
• 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 Spring, Summer, and Fall Venture Programs.

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

Fairness Impact of Differential Privacy, Cambridge, MA Sept 2021 to Present
• Working with Microsoft data scientist to investigate 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, Cambridge, MA Feb 2021 to 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, Cambridge, MA Dec 2020
• Led a team of three to develop a Python package that implements forward-mode automatic differentiation.
• Added extensions for root-finding, optimization by gradient descent, quadratic splines, and visualization methods.

LEADERSHIP EXPERIENCE

Exeter College Boat Club, Oxford, UK, *Men's Captain* Nov 2018 to June 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* Sept 2017 to May 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
PepsiCo Data Science Challenge grand prize winner among 250+ contest participants	2020
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

Technical	Python (NumPy, pandas, scikit-learn, TensorFlow, Keras, PyTorch), R, SQL, React, HTML/CSS
Language	Working proficiency in Chinese (Mandarin)
Interests	Rowing, Photography, Writing (Medium blog), Rubik's Cube Solving (WCA profile)