Blake Bullwinkel

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Education

Harvard University Cambridge, MA
M.S. in Data Science. GPA 3.95/4 *May 2022*

Williams College Williamstown, MA
B.A. in Mathematics, Chinese. GPA 3.83/4 (*cum laude*) *June 2020*

University of Oxford Oxford, UK
Attended as part of the selective, year-long Williams-Exeter Program at Oxford (WEPO). *June 2019*

Professional Experience

Microsoft Redmond, WA
Offensive Security Engineer, AI Red Team *Jan 2024–Present*

- Leading red teaming of the Phi-3 language models including Phi-3-mini, small, medium and MoE.
- Researching gradient-based data exfiltration attacks against Copilots with jailbreak filters.
- Testing a variety of generative AI models and products for harmful content and security vulnerabilities.
- Active contributor to PyRIT, an open-source project that automates AI red teaming techniques.

Data & Applied Scientist *Aug 2022–Dec 2023*

- Introduced a method to classify performance bugs and customer incidents using text embeddings.
- Built a pipeline to detect and prioritize kernel-mode memory leaks across the Azure fleet.

Harvard University Cambridge, MA
Teaching Fellow *Feb–May 2022*

- Assisted professors in teaching of CS 109b: Advanced Topics in Data Science, a course focused on non-linear statistical methods and deep learning models, including CNNs, RNNs, LSTMs, GANs, and transformers.

Publications

B Bullwinkel et al. Phi-3 Safety Post-Training: Aligning Language Models with a "Break-Fix" Cycle. *Arxiv 2024.*

B Bullwinkel et al. PyRIT: A Framework for Security Risk Identification and Red Teaming in Generative AI Systems. *Under Review at CAMLIS 2024.*

B Bullwinkel et al. Using Large Language Models for Humanitarian Frontline Negotiation: Opportunities and Considerations. *ICML Workshop on the Next Generation of AI Safety, 2024.*

R Pellegrin*, **B Bullwinkel***, M Mattheakis, P Protopapas. Transfer Learning with Physics-Informed Neural Networks for Efficient Simulation of Branched Flows. *NeurIPS Workshop on Machine Learning and the Physical Sciences, 2022.*

B Bullwinkel*, D Randle*, P Protopapas, D Sondak. DEQGAN: Learning the Loss Function for PINNs with Generative Adversarial Networks. *ICML Workshop on AI for Science, 2022.*

B Bullwinkel, K Grabarz, L Ke, S Gong, C Tanner, J Allen. Evaluating the Fairness Impact of Differentially Private Synthetic Data. *ICML Workshop on Theory and Practice of Differential Privacy, 2022.*

Honors and Awards

CES Infinite Mindset Partnership Award for leading Phi-3 language model red teaming (Microsoft)	*2024*
Quality Stars Award for building a novel memory leak detection pipeline for Azure (Microsoft)	*2023*
Certificate of Distinction in Teaching based on student ratings (Harvard University)	*2022*
IACS Student Scholarship to support data science thesis research (Harvard University)	*2021*
Goldberg Prize in Mathematics for the best senior mathematics colloquium (Williams College)	*2020*
Linen Prize in Chinese for achieving distinction in Chinese (Williams College)	*2020*

Skills

Programming	Python, R, HTML/CSS, JavaScript, SQL, KQL
Libraries	NumPy, Pandas, SciPy, Scikit-Learn, PyRIT, HuggingFace, PyTorch, TensorFlow
Platforms	Azure, AWS, Docker, Linux, Windows
Language	Working proficiency in written and spoken Chinese (Mandarin)