ZACHARY A. BOLTON

Machine Learning Engineer

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ZacharyABolton   ZacABolton   Portfolio

I'm a machine learning researcher and engineer passionate about pushing the boundaries of AI while ensuring it delivers real-world value. My work spans from implementing transformer architectures to developing novel approaches for historical document verification. I combine rigorous technical methodology with creative problem-solving, bringing both theoretical understanding and practical engineering skills to every project. Currently completing my BSc in Computer Science with a focus on ML/AI, I'm eager to contribute to groundbreaking research that shapes the future of machine learning.

EDUCATION

- **University of London:** *First Class Honors* BSc in Computer Science (Machine Learning & AI) | GPA: 90% | April 2025

EXPERIENCE

UNIVERSITY OF LONDON - April 2024 to Present
INDEPENDENT ML RESEARCHER

Advanced ML research focusing on transformer architectures and authorship verification techniques as part of university studies.

- Implemented Siamese Sentence-BERT architecture achieving competitive performance (AUC: 0.900, F1: 0.785) on VALLA benchmark dataset against PAN 2020 shared task participants
- Developed novel LILA dataset with robust genre/topic bias controls, achieving near-perfect metrics (AUC/F1/C@1 > 0.99) across multiple distorted views
- Integrated text distortion techniques with transformer architectures to enhance model robustness against topic/genre overfitting
- Developed and deployed data processing/ML pipeline to AWS-EC2 handling 10M+ words across multiple views

  Stack: PyTorch, HuggingFace Transformers, Python Scientific Stack, AWS-EC2, S3

KID CHESS, INC. - January 2015 to Present
SOFTWARE ENGINEER AND DIRECTOR OF TECHNOLOGY

Educational chess company providing instruction to ~4000 students across metro Atlanta Georgia, U.S.A.

- Created and deployed AI-driven feedback system using OpenAI's GPT-4 API, enhancing personalized learning for ~4000 students
- Led development of online learning platform serving ~4000 students with comprehensive features for remote education
- Automated business processes using Python data processing pipelines, increasing operational efficiency by 40%
- Managed technical team response to pandemic, achieving 90% student retention through platform transition to fully online services

  Stack: Angular, TypeScript, Azure Cloud, Python, OpenAI API, SQL, Git

ML/AI Skills:
- PyTorch & HuggingFace
- Transformer Architectures
- NLP & Text Processing
- Experiment Design
- Model Evaluation
- Data Preprocessing
- AWS-EC2 & S3

Programming:
- Python Scientific Stack
- Typescript/Javascript
- Erlang/OTP
- SQL & Data Processing
- Git/Version Control

Soft Skills:
- Research & Analysis
- Technical Writing
- Problem Solving
- Project Management
- Teamwork