Carter BLUM

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✎ Personal Webpage — ✎ GitHub Profile — ✎ LinkedIn Profile

INDUSTRY EXPERIENCE

Sr. Machine Learning Research Engineer *Bloomberg L.P.* – New York
Current 2021 - 2023

Large Language Models
- Designed & ran distributed data parallel finetuning of BloombergGPT (10+ Billion params), improving F_1 score by 20%.
- Reduced labeled data needed to train production BERT-class models by ›85% by leveraging LLMs, saving months of annotation effort.
- Rapidly proposed & built prototypes for summarization, QA & more using augmented LLMs (e.g. BloombergGPT).

Explaining Large Models
- Built tooling for identifying hallucination in LLMs, reducing non-factual generations by ›40% in demos.
- Developed transparency visualization for deep multimodal models, enabling identification of cause for ›50% test errors.

Design & Deployment of Production Pipelines
- Doubled number of summaries produced by production news pipeline by leveraging BERTQA to boost recall.
- Collaborated to design, build, deploy & monitor new pipelines for news summarization with less than 300ms of latency.

Infrastructure Advancements
- Led task force designing & unifying sampling + ETL tooling & methods across all AI News + Content teams.
- Created popular library for leveraging LLMs in zero & few-shot settings.
- Redesigned & iteratively revamped core C++ routing & pipeline service generating 1000s of stories daily.
- Organized & led talks teaching coding best practices, along with ML reading groups.

AI Research Intern [✎ CODE, ✎ PDF] *Baidu Inc.* – Beijing
2019
- Developed lightweight, distributable improvements for electric vehicle (EV) charging station recommendation system.
- Innovated reinforcement learning model leveraging DQNs + GraphSage, cutting estimated reducible wait time by 72%.

Data Science Intern *Honeywell Inc.* – Minnesota
2017
- Devised algorithm using OCR to parse real images of tables to standardized database entries, with over 90% recall.

Head of Mobile Development [✎ ANDROID, ✎ iOS] *Foodsby L.L.C. (Startup)* – Minnesota
2015 - 2016
- Led development of iOS/Android app with about 1.5 million downloads, a 4.9 star average rating and thousands of daily users.

EDUCATION

M.S. in Computer Science *University of Minnesota*
2018 - 2021

Thesis: Disentangling the Octopus: Towards Decomposing Reinforcement Learning Systems in to Intuitive Subsystems [✎ PDF]
- 3.91/4.0 GPA • Research at UMN AI, Vision & Robotics Lab

Bachelor of Arts, Science *University of Minnesota*
2015 - 2018
- 3.71 / 4.0 GPA • **Majors** : Computer Science, Mathematics, Chinese (Asian Languages and Literature) [*Triple Major*]

RESEARCH

LLM Adversarial Perturbation Robustness [✎ ARXIV] *Bloomberg L.P.*
2022

Don't Retrain, Just Rewrite: Countering Adversarial Perturbations by Rewriting Text (Accepted at ACL 2023)
Ashim Gupta, **Carter Blum**, *Temma Choji, Yingjie Fei, Shalin Shah, Vivek Srikumar, Alakananda Vempala*

Syndicate Consensus Algorithm [✎ CODE] *University of Minnesota*
2020 - 2021
- Devised mechanism for group consensus by incentivizing participants to correctly estimate the value of proposals.
- Kickstarted, coordinated & led group to design and implement intuitive user experience for new app.

Applied Distributable Reinforcement Learning [✎ ARXIV] *Baidu Inc.*
2019

CoordiQ: Coordinated Q-learning for Electric Vehicle Charging Recommendation – **new text** (PrePrint)
Carter Blum, *Liu Hao, Hui Xiong*

SELECTED TECHNICAL SKILLS

Key Technologies: Pytorch, Pandas, KServe/Kubernetes(K8s), Spark, Tensorboard, Plotly, Flutter, Python, JS, C++, Langchain, Huggingface Transformers, Pytorch Lightning, DeepSpeed, AWS S3, Streamlit, Gradio, JAX, Grafana, Humio, Splunk, Docker,