BINFENG XU

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EDUCATION

New York University – *M.S. in Data Science* , 3.9/4.0 SEP 2020 – MAY 2022
- Relevant Coursework: Deep Learning (*Yann Lecun*), Natural Language Processing & Understanding.

Wake Forest University – *B.S. doubling Computer Science and Statistics*, 3.74/4.0 SEP 2016 – MAY 2020
- Relevant Coursework: Data Structure & Algorithms, Machine Learning, Computer Vision, Parallel Programming, Numerical Computation, Mathematical Statistics, Probability Theory, Optimization.

EXPERIENCE

Applied Researcher @ eBay JULY 2022 – PRESENT

My major focus involves algorithms and products to optimize Click-Through-Rate (CTR) in Recommendations. Here are some end-to-end projects I've implemented independently:
- **Product Comparison Table.** A tabular view of related and alternative items, each vertically displaying comparable aspects or features. This product improves site level CTR by 20%+ in A/B tests. Key steps in my solution: (a) A two-tower user-product collaborative filtering model for diverse candidate recalls. (b) A batch-updated *Aspect Importance* model, serving to catalog *Displayed Aspects* per category. (c) An algorithm to select *Pivot Aspects* and a user-funnel prediction model, both controlling K-dedupe filtering upon serving.
- **Book Recommendation.** Recommending semantically similar books based on content. (a) I used external ISBNDB database to build ISBN embedding. (b) I built an auto-scheduled KNN Index Search service. (c) Finally, I created a downstream recall pipeline mapping ISBN KNNs into recommendation candidates.
- **LLM Generated Catchphrase.** Built and deployed a service that prompts Azure GPTs to generate real-time Catchphrase cards for personalized recommendations. Working on mitigating high latency through streaming.
- **Offline RecSys SoTA Validation.** Reproducing benefits claimed in SoTA papers in Recommender Systems is usually unpledged in different setups. Thereby I built a repo to collect and validate SoTA RecSys models on sampled traffic, quickly checking the potential of each approach under eBay's recommendation context.

Research Intern @ eBay MAY 2021 – AUG 2021
- Built and deployed an online detection model for fraudulent seller activities in chat sessions. I trained RoBERTa with concatenation of tokenized messages and user features against fraud labels, and served it with ONNX.

Research @ New York University DEC 2020 – MAR 2021
- *Prediction and Policy-Learning under Uncertainty* Advisor: *Yann LeCun, Alfredo Canziani*

  A policy learning model for self-driving agents. I experimented with an extra penalization on environmental cars in dense traffic, updating their trajectories accordingly in order to avoid colliding into studied agent.

Research @ Wake Forest University SEP 2018 – DEC 2019
- *Tucker Decomposition with f-MRI Neural Activity Tensor* Advisor: *Grey Ballard*

  Used Tucker Decomp. to compress high dimensional fMRI tensors, and discussed robustness with ML models.
- *Object Recognition in Peru Forest* Advisor: *Paul Pauca*

  Trained YOLOv3 to detect illegal mining activities of drone-taken images above Peru forests.

PAPERS

ReWOO: Decoupling Reasoning from Observations for Efficient Augmented Language Models 2023

***Binfeng Xu**, Zhiyuan Peng, Bowen Lei, Subhabrata Mukherjee, Yuchen Liu, Dongkuan Xu*

HONORS

Kaggle: Competitions Master (*Global Rank Top 1%*) MAY 2018 – JUN 2021
- Santander Customer Transaction Prediction (Banking, Classification): Rank #24 of 8,802 (Gold);
- Santa 2020 Contest (Competitive Reinforcement Learning): Rank #17 of 792 (Silver);
- BirdCLEF 2021 Birdcall Identification (Signal Processing, Time-Series): Rank #15 of 816 (Silver);
- Predicting Molecular Properties (Scientific, Time-Series): Rank #182 of 2,749 (Bronze).

ACM ICPC: Regional 4th Place in North Carolina MAR 2019 – MAR 2019

Udacity Nanodegree in Deep Learning SEP 2018 – OCT 2018

TECHNICAL SKILLS

Areas of Strength: Machine Leanring, Augmented Language Model, RecSys, NLP, Computer Vision.
Programming Languages: Python3, Scala, Java, SQL, HTML, C#, C++, Shell.