

Zhenxun Zhuang

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Employments

Meta

RESEARCH SCIENTIST

Bellevue, WA

Sep. 2022 - Now

Meta

MACHINE LEARNING ENGINEER INTERN

Remote

Jun. 2021 - Aug. 2021

- Added support for deriving features from a new data source on training machine learning models.
- Migrated a machine learning model to a new data platform for privacy reasons, retrained the model using new data, and fine-tuned the model to attain matching performance compared with the model currently used in prod.
- Developed a command-line tool for tracing and visualizing the lineage information from a model and a feature it uses back to data source tables and columns used to generate this feature which reduces the time taken to parse lineage information from >5 minutes to <15 seconds.

Meemo

DATA SCIENCE INTERN

San Francisco, CA, U.S.

Jun. 2020 - Aug. 2020

Meemo is a start-up for discovering personalized rewards and insights based on users' recent transactions and purchase history.

- Designed, implemented, and deployed two features on learning delightful insights of users' spending habits and memorable experience.
- Developed an API to automate the process of moderation of contents sent to users which has been used by the whole team and shortened the contents preparation time by at least 50%.
- Designed several visualization tools for investigating a user's purchase history from different angles.

IQVIA

MACHINE LEARNING INTERN

Plymouth Meeting, PA, U.S.

May 2019 - Aug. 2019

- Extended the Online Meta-Learning framework to the non-convex setting and introduced a new performance measure to replace the original one which is only applicable to convex cases.
- Solved a stochastic optimization problem by employing this algorithm, theoretically proved its performance guarantee and robustness to any hyperparameter initialization, and empirically showed its improvement over traditional methods by 20% on accuracy.
- Published results in NeurIPS 2019 workshop and ICASSP 2020.

Education

Boston University

PH.D. IN COMPUTER SCIENCE

Boston, MA, U.S.

Aug. 2018 - Aug. 2022

Dissertation: Adaptive Strategies in Non-convex Optimization **Adviser:** Francesco Orabona

Stony Brook University

PH.D. IN COMPUTER SCIENCE **ADVISER:** FRANCESCO ORABONA

Stony Brook, NY, U.S.

Aug. 2016 - Aug. 2018

University of Science and Technology of China (USTC)

B.ENG. IN ELECTRONIC INFORMATION ENGINEERING

Hefei, Anhui, China

Sep. 2012 - Jun. 2016

Thesis: Prediction & Transform Combined Intra Coding in HEVC **Adviser:** Feng Wu

Publications

Robustness to Unbounded Smoothness of Generalized SignSGD

MICHAEL CRAWSHAW, MINGRUI LIU, FRANCESCO ORABONA, WEI ZHANG, ZHENXUN ZHUANG (ALPHABETICAL ORDER).

NeurIPS 2022

New Orleans, LA

A Communication-Efficient Distributed Gradient Clipping Algorithm for Training Deep Neural Networks

MINGRUI LIU, ZHENXUN ZHUANG, YUNWEI LEI, CHUNYANG LIAO.

NeurIPS 2022

New Orleans, LA

Understanding AdamW through Proximal Methods and Scale-Freeness

ZHENXUN ZHUANG, MINGRUI LIU, ASHOK CUTKOSKY, FRANCESCO ORABONA.

Transactions on Machine Learning Research

August 2022

A Second look at Exponential and Cosine Step Sizes: Simplicity, Convergence, and Performance

XIAOYU LI*, ZHENXUN ZHUANG*, FRANCESCO ORABONA (*EQUAL CONTRIBUTION).

ICML 2021

Virtual

No-regret Non-convex Online Meta-Learning

ZHENXUN ZHUANG, YUNLONG WANG, KEZI YU, SONGTAO LU.

ICASSP 2020

Barcelona, Spain

Surrogate Losses for Online Learning of Stepsizes in Stochastic Non-Convex Optimization

ZHENXUN ZHUANG, ASHOK CUTKOSKY, FRANCESCO ORABONA.

ICML 2019

Long Beach, CA, U.S.

Preprints and Workshop Papers

Online Meta-Learning on Non-convex Setting

ZHENXUN ZHUANG, KEZI YU, SONGTAO LU, LUCAS GLASS, YUNLONG WANG.

NeurIPS workshop: MetaLearn 2019

Vancouver, Canada

Project Experience

Optimal Lab, Boston University

RESEARCH ASSISTANT

Boston, MA, U.S.

May. 2017 - PRESENT

- Designed algorithms for non-convex optimization problems and backed them up with theoretical convergence analyses, with special interests on Stochastic Gradient Descent (SGD) and its many variants.
- Implemented those algorithms in PyTorch/Tensorflow and verified their empirical performance in problems from image classification, natural language processing (NLP), and generative adversarial networks (GANs).

Future Video Codec Research Group, USTC

UNDERGRADUATE RESEARCH ASSISTANT

Hefei, Anhui, China

Dec. 2014 - Jun. 2016

- Designed a novel intra-picture prediction scheme including transform, quantization, and entropy coding based on the High Efficiency Video Coding (HEVC) standard.
- Achieved the bitrate reduction on compressing a video by 1% on average, with 10% on certain types of videos, while preserving the perceptual quality by employing the above scheme.

Academic Services

2022	Reviewer , The 36th Conference on Neural Information Processing Systems (NeurIPS)	<i>New Orleans, LA, US</i>
2022	Reviewer , The 39th International Conference on Machine Learning (ICML)	<i>Baltimore, MD, US</i>
2021	Reviewer , The 35th Conference on Neural Information Processing Systems (NeurIPS)	<i>Virtual</i>
2021	Expert Reviewer , The 38th International Conference on Machine Learning (ICML)	<i>Virtual</i>
2020	Reviewer , The 34th Conference on Neural Information Processing Systems (NeurIPS)	<i>Virtual</i>
2020	Reviewer , The 37th International Conference on Machine Learning (ICML)	<i>Vienna, Austria</i>
2020	Reviewer , The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS)	<i>Palermo, Sicily, Italy</i>
2019	Reviewer , The 33rd Conference on Neural Information Processing Systems (NeurIPS)	<i>Vancouver, Canada</i>

Teaching Activities

2017	Teaching Assistant , CSE 303 Introduction to the Theory of Computation, Instr. Anita Wasilewska	<i>Stony Brook Univ.</i>
2016	Teaching Assistant , CSE 101 Introduction To Computers, Instr. Michael Tashbook	<i>Stony Brook Univ.</i>

Awards

2015	Gold Prize (top 3%) , Outstanding Undergraduate Scholarship	<i>USTC, Hefei, China</i>
2014	Di'ao Scholarship ,	<i>USTC, Hefei, China</i>
2013	Silver Prize (top 11%) , Outstanding Undergraduate Scholarship	<i>USTC, Hefei, China</i>

Technical Skills

Python, PyTorch, C, Matlab, \LaTeX , HTML