

Zhenxun Zhuang

PH.D. STUDENT IN COMPUTER SCIENCE

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Education

Boston University

PH.D. IN COMPUTER SCIENCE ADVISER: FRANCESCO ORABONA

Boston, MA, U.S.

Aug. 2018 - Present

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
- GPA: 3.84/4.30; Rank: 8/104

Internships

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.

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.

Technical Skills

Python, PyTorch, C, Matlab, LaTeX, HTML

Publications

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

Exponential Step Sizes for Non-Convex Optimization

XIAOYU LI*, ZHENXUN ZHUANG*, FRANCESCO ORABONA.

Preprint: 2002.05273

arXiv

Online Meta-Learning on Non-convex Setting

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

NeurIPS workshop: MetaLearn 2019

Vancouver, Canada

Teaching Activities

2017 **Teaching Assistant**, CSE 303 Introduction to the Theory of Computation, **Instr.** Anita Wasilewska

Stony Brook Univ.

2016 **Teaching Assistant**, CSE 101 Introduction To Computers, **Instr.** Michael Tashbook

Stony Brook Univ.

Academic Services

2020 **Reviewer**, The 34th Conference on Neural Information Processing Systems (NeurIPS)

Virtual

2020 **Reviewer**, The 37th International Conference on Machine Learning (ICML)

Vienna, Austria

2020 **Reviewer**, The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS)

Palermo, Sicily, Italy

2019 **Reviewer**, The 33rd Conference on Neural Information Processing Systems (NeurIPS)

Vancouver, Canada

Awards

2015 **Gold Prize (top 3%)**, Outstanding Undergraduate Scholarship

USTC, Hefei, China

2014 **Di'ao Scholarship**,

USTC, Hefei, China

2013 **Silver Prize (top 11%)**, Outstanding Undergraduate Scholarship

USTC, Hefei, China