ZHAO HAIBO

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Education

B.S. in Tongji University, Shanghai, China **2020 – 2024**

Software Engineering (major in Machine Learning) *GPA: 88.45/100*

Preprints

Paper Title: A Stochastic Polyhedral Approximation Method for Decentralized Composite Bilevel Optimization
Author: Ya Liu, Kai Yang* , **Haibo Zhao**, Yu Zhu, Keying Yang
Submitted: NeurIPS 2023 | *Publication link*

Research Experience

Kai Yang lab, Tongji University **Apr. 2022 – Oct. 2022, China**

Research Topic: Developing a novel algorithmic framework to address bi-level programming problems using the cutting-plane method.

- Derived the specific elaboration of the general algorithmic framework in the field of meta-learning.
- Built a classic CNN network using PyTorch and implemented our proposed algorithm.
- Demonstrated that in a centralized setting, our algorithm can improve efficiency by 5% compared to relevant algorithms.

Result: The paper was published at ICLR 2023, and my experimental results were adopted.

Kai Yang lab, Tongji University **Oct. 2022 – Now, China**

Research Topic: Expanding the previous algorithmic framework to a distributed setting and incorporating gradient tracing and proximal gradient.

- Completed the mathematical derivation of the algorithmic framework incorporating the proximal gradient.
- Implemented the algorithm for meta-learning and hyperparameter optimization using the PyTorch framework.
- demonstrated that our algorithm can run stably in a distributed environment and improve efficiency by 4% compared to relevant algorithms.

Result: Co-authoring a paper currently under submission to NeurIPS 2023.

SITP(Student Innovation Training Program), Tongji University **May. 2021 – May. 2022, China**

Research Topic: Designing a community travel system tailored for the visually impaired population.

- Conducted on-site investigations and recorded the travel conditions of the visually impaired community.
- Used the Huawei HarmonyOS development kit to create a smart sensing device.

Result: Developed a functional travel system and successfully achieved outstanding results.

Projects

Camera Calibration Tool | *Project link*

- Built a user-friendly visual interface using Qt.
- Implemented camera calibration functionality using C++ and OpenCV library functions.

Diabetic Retinopathy Detection | *Project link*

- Conducted filtering, cleaning, and other preprocessing on the DDR dataset.
- Built a Unet+ResNet50 model and completed the diabetic retinopathy classification task.
- Built a BiRA-Net model and accomplished the diabetic retinopathy grading task.

Club Management Platform | *Project link*

- Developed the front-end webpage using the Vue framework.
- Conducted back-end development using the Spring Boot framework.
- Performed database management using MySQL.

Honors

Second Prize, ChinaUndergraduate Mathematical Contest in Modelling. - School level **May. 2021**

First Prize, International College Students' 'Internet+' Innovation and Entrepreneurship. - School level **Jun. 2021**

Second Prize, ChinaUndergraduate Mathematical Contest in Modelling. - Province level **Nov. 2021**

Second Prize, National College Student Electrical and Mathematical Modeling Competition. - National level **May. 2023**