

Yifan Bao

SENIOR UNDERGRADUATE, COMPUTER SCIENCE, ZHEJIANG UNIVERSITY

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EDUCATION	Chu Kochen Honors College, Zhejiang University, Zhejiang, China <i>Bachelor of Engineering, Computer Science and Technology, Jul' 18 - Jul' 22 (Expected)</i> GPA: 3.90/4 (89.26/100) (Overall), top 15% Third Year GPA: 3.99/4 (90.38/100) , top 3% TOEFL: 104 (R: 29, L: 28, S: 23, W: 24) GRE: 332+4.5 (Verabl: 162, Quant: 170, AW: 4.5)
RESEARCH INTERESTS	Machine Learning, Computer Vision, Programming Language, Side Channel Attacks
PUBLICATIONS	Mosaicking to Distill: Knowledge Distillation from Out-of-Domain Data Gongfan Fang, Yifan Bao , Jie Song, Xinchao Wang, Donglin Xie, Chengchao Shen, Mingli Song, Advances in Neural Information Processing Systems (NeurIPS), 2021
AWARDS & ACHIEVEMENTS	Third-Class Scholarship for Outstanding Students of ZJU(Top 20%), 2018 & 2019 Excellent Conclusion of Student Quality Training Project of Zhejiang University, 2018 Excellent Conclusion of Student Research Training Program of Zhejiang University, 2019 Excellent Volunteer of fifth China College Students' 'Internet+' Innovation and Entrepreneurship Competition, 2019 Thrid Prize in University Students' Physics (Theory) Innovation Competition of Zhejiang Province, 2019.
RESEARCH PROJECTS	Side Channel Attack on AI chips <i>Supervisor : Prof. Fan(Terry) Zhang, ZJU Mar '19 - May '20</i> <ul style="list-style-type: none">- Side Channel Attack(SCA) is an attack technique based on the leakage of information gained from computer system.- Applied power analysis(one category of SCA) to reverse engineer part of parameters and hyper-parameters of feedforward neural network designed for cat recognition task running on Xilinx Zynq-7000S FPGA board.- Applied power analysis to reverse engineer the inputting binary images of convolutional neural network designed for MNIST handwritten digit recognition task running on Xilinx zynq-7000s FPGA board.- Designed protective strategies for the two experimental neural networks against potential attacks. Specifically, random masking and random shuffling. Domain adaptation on semantic segmentation <i>Supervisor : Prof. Min Chi, NCSU July '21 - Aug '21</i> <ul style="list-style-type: none">- Evaluation letter- Project page- Implemented an adversarial training-based domain adaptation model on semantic segmentation task, using Cityscapes and SYNTHIA datasets.- Performed comprehensive analysis and ablation studies on several factors in adversarial domain adaptation.- Evaluated and compared the effectiveness and robustness of two segmentation models.- Provided in-depth explanations for the effectiveness of the proposed domain adaptation framework.

MosaicKD: Knowledge distillation from out-of-domain data

Supervisor : [Prof. Mingli Song, ZJU](#) & [Prof. Xinchao Wang, NUS](#)

Feb '21 - Sep '21

- [Project page](#)

- Proposed to tackle the novel and challenging out-of-domain knowledge distillation(OOD-KD) task, allowing us to conduct KD using only OOD data that can be readily obtained at a very low cost.
- Helped to form the insight behind MosaicKD: samples from various domains share common local patterns; these shared local patterns, in turn, can be re-assembled analogous to mosaic tiling, to approximate the in-domain data and to further alleviating the domain discrepancy.
- Participated in the model design, coding, and experimenting on diverse tasks and benchmarks.
- Conducted the quantitative analysis and the ablation study.

Clothing parsing algorithm design for virtual try-on

Supervisor : [Prof. Mingli Song, ZJU](#)

July '20 - Oct '20

- Served as a research intern in Computer Vision and Video Analysis Laboratory [Computer Vision and Video Analysis Laboratory](#), Alibaba-Zhejiang University Joint Research Institute of Frontier Technologies(AZFT).
- Customized, modified, integrated and improved the existing segmentation algorithms including Deeplab-v3+, CascadePSP, and PointRend for clothing parsing with Zeekit clothing dataset provided by Alibaba.

COURSE PROJECTS

Mini-SQL in C++

Course : [Database System](#) | Supervisor : [Prof. Jianling Sun](#)

Mar '20 - Jun '20

- Built a simple local relational database, with data types including *int*, *float*, and *char(n)* supported.
- Implemented features such as *creating*, *inserting*, *deleting*, and *indexing*(using self-implemented *B+ tree*).

Skip List implementation and analysis

Course: [Advanced Data structure](#) | Supervisor : [Prof. Yang Yang](#)

Mar '20 - Jun '20

- A [skip list](#) is a data structure that is used for storing a sorted list of items with the help of hierarchy of linked lists that connect increasingly sparse subsequences of the items.
- Implemented the skip list data structure, tested the performance of self-implemented skip list with different going up probability and compared it with the ideal one .

STL allocator and memory pool

Course: [Object Oriented Programming](#) | Supervisor: [Weiwei Xu](#)

Mar '20 - Jun '20

- An [allocator](#) is used by standard library containers as a template parameter.
- Designed a memory pool to speed up the dynamic allocation of a large number of small blocks, and to reduce memory fragmentation.
- Replaced the default allocator with a new one that optimizes the memory allocation speed using memory pool, supporting arbitrary memory size allocation request.

Compiler for a C-like language

Course : [Compiler Principle](#) | Supervisor : [Prof. Ying Li](#)

April '21 - July '23

- Implemented the front end(as well as optimization) of a compiler for SysY language(a language used in [Huawei Bisheng System Design Contest](#))
- Participated in the design of back end(target platform: Raspberry Pi, ARM Cortex-A72 CPU2GB LPDDR4 SDRAM).

COMPUTER SKILLS

Languages: Java(Proficient), Python(Advanced), C/C++(Advanced), Shell(Familiar), \LaTeX
Research Tools: PyTorch(Competent), OpenGL(Familiar)

EXTRA INTERESTS

Hobbies: Competitive Programming, Jogging(Marathon), Pingpong, Swimming, Mountain Climbing, Photography,