Jun-Liang **Lin**

PhD student in CSE @ Penn State

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Research Interests

I am broadly interested in optimizing machine learning applications using machine learning techniques, especially in AutoML and Neural Architecture Search. Recently, I have focused on heterogeneous graphs, using AutoML techniques to optimize the training of Graph Neural Networks for better performance.

Education

Pennsylvania State University (PSU)   *PA, USA*
Ph.D. student in Computer Science and Engineering   *Sep. 2021 - Present*

- Advisor: Prof. Mahmat Kandemir
- Teaching Assistant for *Programming and Computation II: Data Structures*

National Taiwan University (NTU)   *Taipei, Taiwan*
M.S. in Electrical Engineering (Computer Science Division)   *Sep. 2017 - Aug. 2019*

- Advisor: Prof. Sheng-De Wang
- GPA: 4.21/4.3; Teaching Assistant for *Intelligent Devices and Cloud Computing*

National Taiwan University (NTU)   *Taipei, Taiwan*
B.S. in Biomechatronics Engineering   *Sep. 2013 - Aug. 2017*

- Advisor: Prof. Chien-Yu Chen
- GPA: 3.90/4.3; Received three Presidential Awards.

Publication

[3] **Jun-Liang Lin***, Tsung-Ting Hsieh*, Yi-An Tung*, Xuan-Jun Chen, Yu-Chun Hsiao, Chia-Lin Yang, Tyng-Luh Liu, Chien-Yu Chen, "ezGeno: an automatic model selection package for genomic data analysis," *Bioinformatics*, 2021.

[2] **Jun-Liang Lin***, Yi-Lin Sung*, Cheng-Yao Hong*, Han-Hung Lee, and Tyng-Luh Liu. "The Maximum a Posterior Estimation of DARTS." In *2021 IEEE International Conference on Image Processing (ICIP)*, pp. 419-423. IEEE, 2021.

[1] **Jun-Liang Lin**, and Sheng-De Wang. "Communication-Efficient Separable Neural Network for Distributed Inference on Edge Devices." *arXiv preprint arXiv:2111.02489 (2021)*.

Research Experience

Computer System Lab (Advisor: Dr. Jan-Jan Wu)   *Academia Sinica, Taipei, Taiwan*
Research Assistant   *Sep. 2020 - Aug. 2021*

- Optimize the operators in stripe-wise pruning models in order to fully utilize the GPU computing power.
- Use tiling technique and sparsity-based mapping strategy to improve sparse matrix multiplication on a heterogeneous system with AVX512 and Tensor cores.

Computer Vision Lab (Advisor: Dr. Tyng-Luh Liu) *Academia Sinica, Taipei, Taiwan*
RESEARCH ASSISTANT *Sep. 2019 - Sep. 2020*

- Improved Neural Architecture Search (NAS) algorithm for image classification via Maximum a Posterior (MAP) estimation.
- Proposed an AutoML framework for genomic analysis.
- Used maximum flow algorithm to improve the kernel matching in Federated Learning.
- Surveyed the effect of data augmentation on unsupervised contrastive learning.
- Proposed a multi-level tile-based classification framework for Prostate cANcer graDe Assessment (PANDA) Challenge.

High Performance Lab (Advisor: Prof. Sheng-De Wang) *NTU, Taipei, Taiwan*
GRADUATE RESEARCH *Sep. 2017 - Aug. 2019*

- Focused on aggregating the computing power of edge devices to accelerate the inference of neural networks.
- Proposed a new approach of model parallelism to alleviate the overheads of communication between devices and make distributed inference much more efficiently.
- Provided platform support for an ML-as-a-service project.
- Master's thesis: Communication-Efficient Separable Neural Networks for Distributed Inference on Edge.

C4 Lab (Advisor: Prof. Chien-Yu Chen) *NTU, Taipei, Taiwan*
UNDERGRADUATE RESEARCH *Jun. 2016 - Jun. 2017*

- Used ML techniques to analyze the frequency of single nucleotide polymorphisms (SNPs), which influence the effect of diabetes drugs, in a Taiwanese population.

Work experience

Academia Sinica *Taipei, Taiwan*
FULL-TIME RESEARCH ASSISTANT *Sep. 2019 - Aug. 2021*

INTEL *Taipei, Taiwan*
CHROME OS VALIDATION, INTERNSHIP *Sep. 2017 - Jun. 2018*

- Developed, modified, and executed Chrome OS test plans on Chromebook.

KKBOX *Taipei, Taiwan*
SOFTWARE QUALITY ASSURANCE, INTERNSHIP *Aug. 2017 - Sep. 2017*

- Analyzed and wrote test standards and procedures for the music streaming apps.

Honors & Awards

2018	**Graduate Research Fellowship**, NTU EE Dept.
2016	**Professor Tomotake Takasaka Scholarship**, NTU BIME Dept.
2015	**Rong-Zunn Wang Culture and Education Foundation Scholarship**, NTU BIME Dept.
2013-15	**Presidential Award**, NTU BIME Dept. (Fall'13, Spring'14, Spring'15; Top-2 out of 40)

Skills

Programming Languages: Python, C++, MATLAB, R

Embedded Platforms: Raspberry Pi, Arduino, Nvidia TX2

DL Frameworks: TensorFlow, PyTorch, Keras