

SIYANG JIANG

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RESEARCH INTEREST

- Algorithms and systems for distributed/federated data analytics.
- Algorithms for Fully Homomorphic Encryption and Data Compression within Neural Networks.

EDUCATION

- **The Chinese University of Hong Kong (CUHK)** Hong Kong, China
 - Ph. D. Information Engineering Sept. 2022 - June 2026 (Expected)
 - Advisor: [Prof. Guoliang Xing](#)
- **National Taiwan University (NTU)** Taipei, Taiwan
 - M. S. Electrical Engineering Sept. 2019 - June 2021
 - Advisor: [Prof. Ming-Syan Chen](#). GPA: 4.24/4.3
 - Coursework: Computer Vision from Geometry, Deep Learning, Matrix Computing
- **Shaanxi Normal University (SNNU)** Xi'an, China
 - B. S. Information and Computing Science Aug. 2015 - June 2019
 - GPA: 3.74/5.0, ranking: 4/41
 - Coursework: Calculus, Advanced Algebra, Modern algebra, Real Analysis, Machine Learning

RESEARCH EXPERIENCE

- **Research Assistant.** 02/2022 - present.
 - Department of Information Engineering, The Chinese University of Hong Kong
 - Advisor: [Prof. Guoliang Xing](#)
 - Designing federated learning system for heterogeneous data distribution.
- **Research Assistant.** 11/2021 - 02/2022.
 - Thrust of Internet of Things , The Hong Kong University of Science and Technology (GZ).
 - Advisor: [Prof. Songze Li](#)
 - Designing federated machine learning mechanism for covering extremely data distribution shift, especially under the strong privacy protection constraint.
- **Research Assistant.** 10/2019 - 06/2021
 - Department of Electrical Engineering, National Taiwan University.
 - Advisor: [Prof. Ming-Syan Chen](#)
 - Designed a deep learning algorithm, namely PRADA, to overcome the support-query shift in few-shot learning. Invented a high efficiency QR decomposition accelerator on edge device using systolic array.

PUBLICATIONS

- Hu Jian*, Siying Wang* , **Siyang Jiang***, Musk Wang. Implementations that Matter in Cooperative Multi-Agent Reinforcement Learning. *Proc. of International Conference on Learning Representations (ICLR 2022) Blog Track*. Under Review.
- **Siyang Jiang**, Hsi-Wen Chen, Rui Fang, Wei Ding, Ming-Syan Chen. On the Acceleration of Dual-Triangular QR Decomposition for Fast Matrix Operations. *IEEE Transactions on Circuits and Systems II: Express Briefs. (IEEE TCSII)*. Under Review.
- **Siyang Jiang**, Wei Ding, Hsi-Wen Chen, Ming-Syan Chen. PGADA: Perturbation-Guided Adversarial Alignment for Few-shot Learning Under the Support-Query Shift. *Proc. of the 26th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2022)*.
- Xian Shuai, Yulin Shen, **Siyang Jiang**, Zhihe Zhao, Wenhai Lan, Guoliang Xing. BalanceFL: Addressing Class Imbalance in Long-tail Federated Learning *ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2022)*.
- **Siyang Jiang**, Hsi-Wen Chen, Ming-Syan Chen. Dataflow Systolic Array Implementations of Exploring Dual-Triangular Structure in QR Decomposition Using High-Level Synthesis. *Proc. of the IEEE International Conference on Field Programmable Technology (FPT 2021)*.
- Jian Hu*, **Siyang Jiang***, Haibin Wu, Seth Austin Harding, Shih-Wei Liao. Revisiting the Monotonicity Constraint in Cooperative Multi-Agent Reinforcement Learning. *arXiv preprint arXiv:2102.03479*. [[Github](#) 300+ Stars]
- **Siyang Jiang**, Xiuyan Yao, Qianju Long, Jiali Chen, Hui Jiang. Fund investment decision in support vector classification based on information entropy, *Review of Economics & Finance*, 2019(1):57-66.
- **Siyang Jiang**, Long Cheng, Hui Jiang. Research of Modified Ternary Search Algorithm and Its Applications, *Journal of Huizhou University*, 2017(6): 33-43.

PATENT

Patent for Invention	Under Review	2021-present
<ul style="list-style-type: none">• <i>Library Journal Citation Reports Management System</i> Management the Journal/Conference Citation information and produce reports with machine learning algorithms to Library in Universities.		
Computer Software Copyright of China	Certification ID: 2018SR134747	2018
<ul style="list-style-type: none">• <i>Big data intelligent collection and statistical analysis management system</i> Used to collect and analyze large-capacity data which is difficult to capture, manage, and analyze.		

SELECTED COMPETITIONS

Kaggle Competitions: Sartorius - Cell Instance Segmentation	10/2021 - 12/2021
<ul style="list-style-type: none">• Top 4%, Sliver Medal.• Neurological disorders, including neurodegenerative diseases such as Alzheimer's and brain tumors, are a leading cause of death and disability across the globe. However, to segment individual neuronal sartorius cells in microscopic images can be challenging and time-intensive. We will release our solution when the competition finished.	
Medical Imaging [Project]	12/2020 - 01/2021

*These authors contributed equally to this work.

- **Ranking: Bronze Medal**

- Cerebral hemorrhage, bleeding that occurs inside the brains, is a serious health problem requiring rapid and often intensive medical treatment. Besides, looking for the presence, location and type of hemorrhage is complicated and often time consuming. We use two stages CNN-LSTM to solve cerebral hemorrhage image classification problem. In addition, we also use self-supervised learning in small dataset to improve the performance via explore inherent structure information in unseen domain.

Kaggle Competitions: Cassava Leaf Disease Classification [\[Github\]](#) 12/2020 - 02/2021

- **Ranking: Top 7%, Bronze Medal**

- A EfficientNet-based network was used to solve leaf disease classification problem in a truly dataset with 21,367 labeled images. Ensemble method, data augmentation method and kinds of loss were implemented to improve the classification accuracy.

Big Number Factorization [\[Project\]](#) 02/2018 - 08/2018

- **Ranking: Top 1%, Sliver Medal**

- Used several algorithms such as Pollard rho algorithm, Pollard $p-1$ algorithm, etc., to factor a 432 in decimal big number. Those algorithms are implemented using Python, Matlab, and C++.

SELECTED HONOR

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|--|------------------------|
| • National Cryptography Mathematics Challenge | Sliver Prize |
| • Merit student | Four Consecutive Years |
| • First Class Excellent Scholarship | Four Consecutive Years |
| • "KaiLiXin Materials" Scholarship | (1/228) |
| • National College Student Business Plan Competition in 2016 | Bronze Award |

INTERN AND EXTRACURRICULAR ACTIVITY

Digital China Information Service Company (Xi'an) 09-11/2018

- Excellent Intern Student
- Building a bank business system, which was stable in our test, with basic CRUD features within for bank business.

Big data and AI Summer Camp 07-08/2018

- Teaching Assistant
- Assist the professor from Shanghai Jiao Tong University for dealing with the Spark and Hadoop problems for the students in the camp.

SKILLS

Programing Tools	Python, Matlab, C/C++, R, Vivado HLS, HTML, Php, L ^A T _E X
Framework	Pytorch
Languages:	English (Fluent), Mandarin (Native)

ACADEMIC SERVICES

PC Member/Reviewer: *ECML-PKDD 2021-2022, WACV 2022.*