

LIZHANG CHEN

Contact Information

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Education

- Aug/2018~Present **Beijing Jiaotong University**
Bachelor of Science in Mathematics and Applied Mathematics (GPA: 3.87/4.00, Rank: 1/60)
- Jan/2021~ Present **University of Victoria (Visiting Student)**
- Jul/2017~ Aug/2017 **Shandong Mathematical Society Summer Camp (Shandong University)**

Experience

- Research intern in [Gatsby Computational Neuroscience Unit - UCL](#)
Major topic: Diagnostic tools for generative models
- Research intern in [Sino-singapore International Joint Research Institute](#)
Major topic: Generalization in neural networks

Research Experience

- Machine learning and its applications in Bioinformatics (supervised by [Xuekui Zhang](#))
We formulate the problem of clinical trial design into an optimization problem involving high-dimensional integration, and propose a novel computational solution based on Monte-Carlo and smoothing methods. Our method utilizes the modern techniques of General-Purpose computing on Graphics Processing Units for large-scale parallel computing. Compared to the standard method in three-dimensional problems, our approach is more accurate and 133 times faster.
- Explain the generalization theory of neural network (supervised by [Jitao Sang](#))
*In this research, we propose a new **Independent and Task-Identically Distributed (ITID)** assumption, to consider the task properties into the data generating process. The derived generalization bound based on the ITID assumption identifies the significance of hypothesis invariance in guaranteeing generalization performance.*
- Research on power system protection based on transient component (supervised by [Liangliang Hao](#))
*After exploring the basic theory of wavelet alternation, the research goes on to study how to fix fault time quickly and precisely among fault signals in power systems in Python. We use wavelet transform for data processing, and then use **K-means** for fault classification, with an accuracy of 95%*
- [Thermodynamics and Kinetics Simulation Project](#) (supervised by [Xinghua Zhang](#))
*This project stands for **Graphics Processing Units Molecular Dynamics**. It is a general-purpose molecular dynamics (MD) code fully implemented on graphics processing units (GPUs). Force evaluation for many-body potentials has been significantly accelerated by using GPUs, thanks to a set of simple expressions for force, virial stress, and heat current. Apart from being highly efficient, another unique feature of our project is that it has useful utilities to study heat transport. (Software: Unity3D. Computer language: CUDA C++/C#. Server: Linux).*

Publications

• *An Experimental Study of Semantic Continuity for Deep Learning Models* Shangxi Wu, Jitao Sang, Xian Zhao, **Lizhang Chen** Tech report, arXiv, 2020 [arXiv 2011.09789](https://arxiv.org/abs/2011.09789) (*submit to CVPR 2021*)

• *Specification 01 series and Catalan number*. **Lizhang Chen**, Songkun Yan and Jiashen Tong. (2017). [GaoZhong ShuLiHua, 10.3969/j.issn.1007-8312.2017.23.001](https://doi.org/10.3969/j.issn.1007-8312.2017.23.001)
(陈立章, 颜松昆, 童嘉森. "规范 01 数列"与卡塔兰数[J]. 高中数理化, 2017, (23):1-2. DOI:10.3969/j.issn.1007-8312.2017.23.001.)

• *Applying the idea of reforming to the second-order linear recursive sequence*. **Lizhang Chen**, Jiashen Tong. (2017). [Gao Zhong ShuLiHua, 2017,\(7\):1. DOI:10.3969/j.issn.1007-8312.2017.07.001](https://doi.org/10.3969/j.issn.1007-8312.2017.07.001).
(陈立章, 童嘉森. 运用化归思想求二阶线性递推数列通项[J]. 高中数理化, 2017, (7):1. DOI:10.3969/j.issn.1007-8312.2017.07.001.)

Honors& Fellowships

- Second prize in North China Undergraduate Physics Tournament. 2020
- Second prize in China Undergraduate Physics Experiment Competition. 2020
- Second prize in Undergraduate Physical Experiment Competition of Beijing. 2019
- Second prize in Shandong province mathematical society summer camp. 2017
- Second prize in Chinese National High School Mathematics League. 2017

Computer Skills

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| • Latex | • Linux | • TensorFlow/Pytorch |
| • Unity3D | • C/C++/C#/Python/MATLAB/R (Proficient) | |

Languages

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| • Chinese | • English |
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Hobbies

- Table tennis (member of Table Tennis Men's team of School of Science)