Zhiping WANG

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Education

School of Physical Science and Technology, Lanzhou University(Project 985) *Lanzhou, China*
National Training Base for Research and Teaching Talents in Basic Science Disciplines *Sep 2020 – Present*

***Major**: Physics (Bachelor of Science degree expected in July 2024)*
***GPA**: 84.6/100, **Ranking**: 4/20(20 Selected from 52)*

***Major courses:**Fourier optics(89), Computational Physics (100), Methods of Mathematical Physics II (99), Optoelectronic Technology and Applications(94), AI and Big Data(97), Theoretical Mechanics, Statistical Physics, Electrodynamics, Quantum Mechanics, Ferro Magnetism, Magnetic Materials and Measurements, Linear Algebra.*

Honors and Awards

Outstanding Student Scholarship		*2023,2022*
China Undergraduate Physics Tournament(Northwest Region)	Second Prize	*2022*
China Undergraduate Physics Tournament(Northwest Region)	First Prize	*2021*

Publication

[1] Zhiping Wang, Tianci Feng, and An Pan. ***Joint Optimization of Imaging Fusion for Convolutional Neural Network-based Fourier Ptychographic Microscopy (CNN-based FPM)***.

- During the initial phase of drafting the article, adjustments to both the authorship and the title of the paper are possible.

[2] Zhiping Wang. ***Performance of Coherent Ising Machine on Weighted NP-hard Problem***.

- Preprint

[3] Fannuo Xu, Zipei Wu, Chao Tan, Zhiping Wang, Yizheng Liao, Keru Chen, and An Pan. ***Fourier Ptychographic Microscopy 10 Years On: A Review***.

- Under Peer Review, Planned for Submission to *cells*. **Invited Manuscript**

Research/Projects Experience

Here are several representative ongoing or completed research. For more information, please visit my personal website.

Research on Fast Fourier Ptychographic Based on Illumination Control *Aug 2023–present*
Research Internship, Supervisor: Dr. An Pan, Pioneering Interdiscipline Center of CAS

- Studied articles related to the principles of Fourier Ptychographic Microscopy and actively participated in experiments to gain insights into the details.
- Performed numerical simulations to assess the effect of various led on image restoration, explored relevant literature and theory to seek support for reducing overlap rates; experiment still in the planning.

Exploring the Performance of Coherent Ising Machine in weighted NP-Hard Problems *Dec 2022–Aug 2023*
Independent Study, Advisor: Jie Zhu, School of ECE, Purdue University

* The Project's code and details can be viewed at the GitHub project link.

- Replicated prior research using an Optical Parametric Oscillators (OPO)-based coherent Ising machine for numerical simulations, utilizing theoretical equations, and applying the Runge-Kutta method to solve differential equations in Python.

- Utilized coherent Ising machine to address number partitioning problems and MAX-CUT in unweighted graphs, for the MAX-CUT problem, the success possibility of the Ising machine approach was higher.
- Applied the MaxCut problem to weighted graphs and found similar trends, suggesting that the success possibility might be associated with the weights.

Reproduction of Reverse Design of Nano-Optical Structures By Neural Networks *Apr 2022–Mar 2023*
Research Assistant, Advisor: Dr. Hao Jia, Lanzhou University & KAUST

- Carried out literature research on the reverse design methods for optoelectronics devices and their applications.
- Created an optical system employing a tandem architecture that combines forward modeling and inverse design based on the work of Yu Zongfu's team.
- Coded in Python using TensorFlow to capture the trends mentioned in the paper using a small sample dataset.

Palm print identification *Nov. 2021 – Mar. 2022*
Advisor: Dr. Jizhao Liu, School of Information Science and Engineering

* The Project's code and details can be viewed at the GitHub project link.
- Learned common operations in machine learning and digital image processing, especially biometrics.
- used various filters for feature extraction, and finally PCA is used for dimensionality reduction.
- Coded in Python using TensorFlow to capture the trends mentioned in the paper using a small sample dataset.
- Achieved a high success rate for the Hong Kong Polytechnic University open source database and part of the students' data recognition success

Exploration of the nature and causes of candle flame oscillator *Oct. 2020 – Sep. 2021*
Advisor: Dr. Ning Huang, School of Physical Science and Technology

- Searched the article to understand the conditions and root causes of the phenomenon of coupled flame oscillations when several candles are burned in close proximity to each other.
- Captured images and temperatures of the coupled oscillations and processed them with OpenCV to obtain theoretically relevant experimental data.
- Modeled and interpreted using thermodynamic fluid dynamics, and drawing conclusions.
- Participated in China Undergraduate Physics Tournament(Northwest Region) as a tournament topic and won the first prize in June 2021.

Skills

Programming:	Proficient in C/C++, MATLAB, Mathematica, Python (TensorFlow, OpenCV, etc.), LaTeX/Tex
Software:	Familiar with Comsol, SolidWorks, Zemax, PixInsight; Proficient in Adobe Illustrator, Photoshop
Computing Skills:	Experienced in supercomputing environments for high-performance computing tasks Competent in Linux for system administration and scripting Familiar with CUDA for GPU-accelerated computing

Teaching Experience

School of Physical Science and Technology, Lanzhou University *Lanzhou, China*
Teaching Assistant for the Computational Physics Class *September 2021 – January 2022*

- Reviewed and graded student assignments, provided constructive feedback to students, and helped teachers with ongoing evaluation.
- Assisted students with course material, answered questions during regular office hours I held or in the class, and conducted supplemental study sessions to enhance students' understanding of complex topics.
- Collaborated with the course instructor to develop educational materials, including presentations and assignments, to improve the overall learning experience.