

## Kaichen Ouyang

Email: oykc@mail.ustc.edu.cn Tel: +86 15888787619

### Education Background

---

2020.09 – 2024.06	University of Science and Technology of China	China
-------------------	---	-------

- Degree: Bachelor
- Major: Mathematics and Applied Mathematics GPA: 82.04/100 IELTS:7.0/9.0
- Certificate: Plan for strengthening basic academic disciplines, Strengthening Foundation Plan in Mathematics
- Google Scholar :
- [https://scholar.google.com/citations?hl=en&user=mbXU6jIAAAAJ&view\\_op=list\\_works&gmla=AIfU4H6jCWMU5dl7FPaVrUqQqMjpy\\_CYIFkCO7jDS1u-G-9RoKH3OqF44fDE4etf92suGzkubJrjxogd0w1zxAT](https://scholar.google.com/citations?hl=en&user=mbXU6jIAAAAJ&view_op=list_works&gmla=AIfU4H6jCWMU5dl7FPaVrUqQqMjpy_CYIFkCO7jDS1u-G-9RoKH3OqF44fDE4etf92suGzkubJrjxogd0w1zxAT)
- Research Interests: AI for Math and Physics, AI's Math and Physics

### Publications

- 
- Ouyang, K., et al *Graph Learning Metallic Glass Discovery from Wikipedia* Summit in Nature machine intelligence (JCR Q1, IF:23.9)--**First Author**
  - Ouyang, K., et al. *Study of nonequilibrium phase transitions mechanisms in exclusive network and node model of heterogeneous assignment based on real experimental data of KIF3AC and KIF3CC motors.* European Physical Journal Plus. (JCR Q2, IF:2.8)-**Co Author**
  - Ouyang, K., et al. *Physical mechanisms of exit dynamics in microchannels of nonequilibrium transport systems.* International Journal of Modern Physics B. (JCR Q2, IF:2.6)-**Co Author**
  - Ouyang, K., et al. *Escape: an optimization method based on crowd evacuation behaviors.* Artificial Intelligence Review. (JCR Q1, IF:13.9)--**First Author**
  - Ouyang, K., et al. *Multiple Objectives Escaping Bird Search Optimization and Its application in Stock Market Prediction Based on Transformer Model.* Scientific Reports. (JCR Q1, IF:3.9)--**Corresponding Author**
  - Ouyang, K., et al. *Dynamic Graph Neural Evolution: An Evolutionary Framework Integrating Graph Neural Networks with Adaptive Filtering.* 2025 IEEE Congress on Evolutionary Computation (Oral)--**First Author**
  - Ouyang, K., et al *Trend-Aware Mechanism for metaheuristic algorithms* Applied Soft Computing (JCR Q1, IF:6.6)--**Second Author**
  - Ouyang, K., et al *A Generative Adversarial Network Based Investor Sentiment Indicator: Superior Predictability for the Stock Market* Mathematics (JCR Q1, IF:2.2)--**Corresponding Author**
  - Ouyang, K., et al *Learn from Global Correlations: Enhancing Evolutionary Algorithm via Spectral GNN* Summit in 2025 Neural Information processing Systems (Arxiv)--**First Author**
  - Ouyang, K., et al *Rethinking Over-Smoothing in Graph Neural Networks: A Perspective from Anderson Localization* (Arxiv)--**Sole First Author**
  - Ouyang, K., et al *Consciousness as a Jamming Phase* (Arxiv)--**Sole First Author**
  - Ouyang, K., et al *Multi-Objective Mobile Damped Wave Algorithm (MOMDWA): A Novel Approach For Quantum System Control* (Arxiv)--**Corresponding Author**
  - Ouyang, K., et al *Newton Downhill Optimizer for Global Optimization with Application to Breast Cancer Feature Selection* Biomedical Signal Processing and Control (JCR Q1, IF:4.9), *Under review*--**Corresponding Author**
  - Ouyang, K., et al *Multi-objective Red-billed Blue Magpie Optimizer: A Novel Algorithm for Multi-objective UAV Path Planning* Results in Engineering (JCR Q1, IF:7.9), *Under review*--**First Author**
  - Ouyang, K., et al *Beaver Behavior Optimizer: A Novel Metaheuristic Algorithm for Solar PV Parameter Identification and Engineering Problems* Journal of Advanced Research (JCR Q1, IF:13.0), *Under review*--**First Author**
  - Ouyang, K., et al *Multi-strategy improved dung beetle algorithm and its applications in engineering*

*optimization and bankruptcy prediction* Neural Networks (JCR Q1,IF:6.3), *Under review--Corresponding Author*

- Ouyang, K., et al *Twisted Convolutional Networks (TCNs): Enhancing Feature Interactions for Non-Spatial Data Classification* Neural Networks (JCR Q1,IF:6.3), *Under review-Co Author*

#### **Research Experience**

---

- 2025.5 - Present, Data-Driven Multi-Objective Evolutionary Design of Battery Liquid Cooling Materials, USTC, RA
- 2024.2 - Present, Graph Neural Networks & Material Science, Songshan Lake Materials Laboratory, RA
- 2023.5 - 2024.6, Intersection of Non-equilibrium Statistical Physics & Machine Learning, USTC, RA
- 2021.9 - Present, Evolutionary Algorithms & Machine Learning, Wenzhou University, RA
- 2021.3 - 2022.9, Non-equilibrium Statistical Physics & Complex Networks, USTC, RA

#### **Conference Experience**

---

- *CAMMIC 2023*: Discrete Optimization and Optimization of Ethanol Preparation Problem
- *IEEE ICSP 2023*: Quantitative Supervised Learning System of Light Pollution and Its Application
- *IEEE CVIDL 2023*: Intelligent Thermostatic Cold Storage Design Strategies based on Monte Carlo and Graph Neural Networks
- *MAEIE 2024*: Multi-Objective Fertilization Optimization: A New Approach for Microgrid Scheduling
- *5th Amorphous Physics and Materials Symposium 2024*, Attendee

#### **School Experience**

---

- 2022, Mathematical Analysis B1, Teaching Assistant
- 2024, Mathematical Modeling, Teaching Assistant
- 2024, Swarm and Evolutionary Computation (JCR Q1, IF: 8.2), Reviewer
- 2025, Knowledge-Based Systems, (JCR Q1, IF: 7.2), Reviewer
- 2025, International Joint Conference on Neural Networks (IJCNN), Reviewer
- 2025, International Conference on Intelligent Computing (ICIC), Reviewer

#### **Honours**

---

- 2024, Second Prize (Honorable Mention), MCM/ICM
- 2023, First Prize (Meritorious), Huashu Cup International Mathematical Contest in Modeling
- 2023, First Prize, National College Students' Mathematics Competition
- 2022, International Second Prize, Asia-Pacific Mathematical Modeling Competition
- 2020-2021, Outstanding Student Gold Award, University of Science and Technology of China

#### **Skills**

---

- **Language skills**: Chinese ( Native ), English ( Fluent )
- **Computer Skills**: Microsoft Office 365, Python, MATLAB, MySQL, Java, C/C++, Lammmps