

# Tianyi Wu

wuty@stu.pku.edu.cn

## EDUCATION

- **Peking University** August 2022 - Present  
*B.S. in Computer Science, Turing Class* Beijing, China
  - GPA: 3.75/4.00
  - Expected graduation: July 2026

## EXPERIENCE

- **Princeton AI Lab (advised by Prof. Mengdi Wang and Prof. Kaiqing Zhang)** January 2025 - Present  
*Research Internship* Online
- **PKU Machine Learning Lab (advised by Prof. Liwei Wang)** June 2024 - Present  
*Research Internship* Peking University
- **PKU DaGAME Lab (advised by Prof. Xiaotie Deng)** March 2024 - Present  
*Research Internship* Peking University
- **PKU TCS Lab (advised by Prof. Shaofeng Jiang)** March 2023 - July 2024  
*Research Internship* Peking University
- **PKU Course: Machine Learning** August 2024 - February 2025  
*Teaching Assistant* Peking University
- **PKU Course: Practice of Programming in C&C++ (Honor Track)** February 2024 - July 2024  
*Teaching Assistant* Peking University
- **CodinKid Company** July 2024  
*Lecturer* Hefei, Anhui

## PUBLICATION

- **[ICLR 2025] Online Clustering with Nearly Optimal Consistency**  
*T-H. Hubert Chan, Shaofeng H.-C. Jiang, Tianyi Wu, Mengshi Zhao. (Equal Contribution)*

## RESEARCH PROJECTS

- **Sphere Packing (in progress)**  
*Adviser: Prof. Liwei Wang*
  - We are trying to explore Sphere Packing (Hilbert's eighteenth problem). The specific details need to be kept confidential temporarily.
  - Most engineering work is done by me, and I propose many brilliant idea about algorithm design. We gain deep insight into this area of pure math.
- **Automated NP Reduction (in progress)**  
*Adviser: Prof. Xiaotie Deng*
  - We are exploring the way to automated generate NP reduction. Reduction is an ancient and extremely important technique in the area of complexity, which needs great human intelligence.
  - I found the essence of reduction method, and gradually found the way to automate it.
  - We're designing an elegant programming language to express NP language, and a Domain Specific Language which helps to express reduction. We may use a compiler to transform the proof into Lean.
  - We may use deep learning to solve the problem in the future.
- **LLM and Game (in progress)**  
*Adviser: Prof. Mengdi Wang and Prof. Kaiqing Zhang*
  - We're trying to use LLMs to support game design and game engineering, leveraging their general abilities in game playing and coding. We built a game benchmark for testing the ability of LLMs.
  - I independently propose the idea of using LLMs to autoformalize a game description into code, and using LLMs as a player. We build a pipeline to generate game matches given a simple game description in natural languages.

- After completing the code framework by myself, I led a group to carry out the remaining engineering tasks.

- **Consistent Clustering (finished)**

*Adviser: Prof. Shaofeng Jiang*

- We designed an clustering algorithm in online setting which achieve nearly linear consistency. The paper is accepted to ICLR2025.
- I proposed some key idea and participated in writing and submission. I learned many frontier theoretical clustering techniques.
- I also explored the streaming algorithm of steiner tree in Euclidean Space, high dimensional Minimal Spanning Tree problem, and new dimensional reduction technique.

## SKILLS

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- **Programming Languages:** C, C++, Rust, Python, Java, Haskell, Lean, Coq, Agda
- **Languages:** English (TOEFL 90/120), Mandarin (Native)

## HONORS AND AWARDS

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- **John Hopcroft Scholarship** *September 2023, September 2024*  
*John Hopcroft Foundation*
- **Research Excellence Award** *September 2024*  
*Peking University*
- **Academic Excellence Award** *September 2023*  
*Peking University*
- **Silver Medal in National Olympiad in Informatics** *August 2021*  
*China Computer Federation*

## LEADERSHIP EXPERIENCE

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- **Chair of Research Committee** *September 2023 - Present*  
*Center on Frontiers of Computing Studies, Peking University*
  - Chaired CFCs Turing Research Forum in 2025 and participated in organizing the forum in 2023 and 2024.
  - Found and lead the monthly research seminars CS Frontier Tutorials in CFCs since 2024.

## COURSES

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- Mathematical Analysis (I, II, III)
- Advanced Algebra (I, II)
- Probability Theory and Statistics
- Discrete Mathematics and Structures
- Introduction to Numerical Analysis
- Introduction of Modern Applied Math
- Mathematical Logic (this semester)
- Physics for Information Sciences
- Methods of Mathematical Physics
- Introduction to Computing (Honor Track, about functional programming)
- Practice of Programming in C&C++ (Honor Track, about modern algorithms)
- Data Structure and Algorithms (Honor Track)
- Introduction to Computer Systems
- Computer Networks (Honor Track)
- Operating System (Honor Track, this semester)
- Compiler Principles (this semester)
- Software Foundations (about Coq and verification)

- Software Analysis (about program analysis and program synthesis)
- Software Engineering (Honor Track, this semester)
- Fundamentals of Artificial Intelligence
- Machine Learning
- Trustworthy Machine Learning (about interpretability, defenses, and privacy)
- Introduction to the Theory of Computation
- Foundations of Cryptography
- Quantum information
- Algorithmic game theory
- Study and Practice on Topics of Frontier Computing (I, II)