

# Ziyi Cai | Curriculum Vitae

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## Information

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**Description:** I am an undergraduate student in ACM Honor class, Zhiyuan college, Shanghai Jiao Tong University. I am broadly interested in theoretical computer science, especially in machine learning, computational complexity and logic.

## Education

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### Shanghai Jiao Tong University

*B.E. in Engineering in Computer Science*

**Shanghai**

*Sept 2019 –present*

- Average Score: 88.1 / 100
- GPA: 3.73 / 4.0
- Ranking: 11 / 30

## Experience

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### Research.....

#### University of Southern California

*Research Intern advised by Prof. Jiapeng Zhang*

*Feb 2022 –present*

**Research Topic:** spectral methods, PCA

I am now working on foundations of machine learning algorithm. Specifically, I am trying to analyse the performance of classic spectral clustering algorithm under general or advanced settings.

#### Shanghai Jiao Tong University

*Undergraduate Researcher advised by Prof. Yijia Chen*

**BASICS Lab**

*Aug 2021 –present*

**Research Topic:** algorithmic meta-theorems, parameterized complexity

I am now working on algorithmic meta-theorems. Specifically, I am trying to reveal the underlying logic connection between efficiently tractable problems and extend the tractability to more general cases. I mainly focus on parity game over specific classes of graphs and the resolution size of unsatisfiable CNF parameterized by graph based parameters.

### Vocational.....

#### Shanghai Jiao Tong University

*Teaching Assistant of Great Ideas in Computer Science*

*Sept 2022–Jan 2023*

I prepared and gave several lectures on introduction of computational complexity for juniors at ACM Honor Class.

#### Shanghai Jiao Tong University

*Teaching Assistant of Probability and Computing*

*Jun 2022–July 2022*

#### Shanghai Jiao Tong University

*Teaching Assistant of Mathematical Logic*

*Sept 2021–Jan 2022*

#### Shanghai Jiao Tong University

*Teaching Assistant of Programming*

*Sept 2020–Jan 2021*

I led a TA team, and I was deeply involved in the course design.

I'm one of seven initiators and once a maintainer of an online-judge system for not only ACM Honor Class but also other courses in the whole university.

## Honors and Awards

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### Huawei Fellowship

*14 winners at Zhiyuan College each year*

*2021*

### Zhiyuan Honors Scholarship

*Top 5% in SJTU each year*

*2019, 2020, 2021*

### Silver Medal

*The 35th China National Olympiad in Informatics (NOI)*

*2018*

## Skills

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- Programming: C++, Python, Latex, Git
- Language: Mandarin Chinese (native), Cantonese (native), English