



# Charles Zhang

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## Education

### Macalester College, Saint Pual, MN

B.A. Expected May 2023

MAJOR GPA 4.0/4.0

Mathematics, Computer Science

- Charles J. Turck Presidential Honor Scholarship(Four-year scholarship)
- Relevant Coursework:** applied multivariable calculus, linear algebra, intro to the data science, object-oriented programming and abstraction, data structure, computational linear algebra(numerical analysis), machine learning, digital ethics, differential equation

## Skills

**Programming** R(ggplot, ggmap, plotly, leaflet, gganimate, rvest, shiny), **Python**(numpy, pandas, easygui, matplotlib, openCV, tensorflow), **Java**, **MATLAB**, **SQL**, **HTML**, **CSS**, **Markdown**, **T<sub>E</sub>X**, **COMSOL**

## Experience

### Teaching Assistant

St. Paul, MN

Mathematics, Statistics and Computer Science Department, MACALESTER COLLEGE

Jan. 2020 - PRESENT

- Teaching Assistant(Preceptor) in STAT/COMP 112 Intro to the Data Science at Macalester College
- Help 48 students in two class sessions with realize multivariate visualization, data wrangling, interactivity, Leaflet, scraping data, Shiny APP, SQL, and machine learning by R(RStudio)

### Access & Research Services Student Aide

St. Paul, MN

DeWitt Wallace Library, MACALESTER COLLEGE

Sep. 2019 - Dec. 2019

- Provided assistance to patrons in regards to the Integrated Library System(ILS) and gave instructions for finding materials or research guide requested

### Math Tutor

Jinan, China

SELF-EMPLOYED

Jun. 2019 - Aug. 2019

- Designed one-to-one study programs based on high school curriculum to help students excel in learning mathematics everyday in summer holiday in China
- Developed a class timing and scheduling system by *Python* for students having classes in record

### Conference Member

Beijing, China

THE FIRST BRICS MATHEMATICS CONFERENCE

Jul, 2017 - Aug. 2017

- Was invited to attend and listen series of worldwide cutting-edge mathematical lectures from the conference at Chinese Academy of Sciences
- Consulted mathematicians from five BRICS(Brazil, Russia, India, China and South Africa) countries and made a manuscript

## Projects

### R for Data Science: Pizza Party

FINAL PROJECT FOR DATA SCIENCE COURSE AT MACALESTER COLLEGE

Oct. 2019 - Dec. 2019

- Using some data from TidyTuesday's Pizza Party data-set, analyzed and created methods and visualizations for a pizzeria that everyone would like in New York

### Mathematical Modeling for Drone Light Show

HONORABLE MENTION OUT OF 938 TEAMS IN MATHEMATICAL CONTEST IN MODELING

Jan. 2018 - Feb. 2018

- Using *MATLAB*, I built models to determine the required number of drones and every drone's initial location during the process.
- Any simple pictures or icons could be designed for the drone show by my *MATLAB* program.

### Design and Optimization of Comb Drive Accelerator for High Frequency Oscillation

PUBLISHED IN MODERN MECHANICAL ENGINEERING VOL.8 NO.1, FEBRUARY, 2018

Apr. 2017 - Feb. 2018

- This project is mentored by a doctor at UCLA and the final paper was published. In this work, using *COMSOL* and *MATLAB*, a finite element code was used for the design, optimization, and visualization of a comb drive accelerator.

### Generalizations of Locus about Fixed Point and Fixed Line Moving to Magnify and Shrink

PUBLISHED IN MATHEMATICAL STUDY AND RESEARCH VOL 19, 2017

Sep. 2016 - Feb. 2017

- This Chinese geometrical paper is for mathematical Olympics competitions, generalized series of problems of locus by an elegant method and visualized by *Geometer Sketchpad*

## Honors

Dec, 2019 **Top 9**, The Mathematical Association of America-North Central Section(MAA-NCS) Team Contest

U.S.A

Feb, 2018 **Top 5%**, American Mathematics Competition(AMC12)

U.S.A

Nov, 2017 **Honorable Mention**, Mathematical Contest in Modeling

U.S.A

Sep, 2017 **First Prize**, Chinese Mathematics League

China