

David Feng '21

Data-Driven Change



**WESTTOWN
SCHOOL**

David Feng

Senior

Tianjin, China

Entered Westtown in 2017

Certificate in Data-Driven Change



Personal Statement

Data is perhaps the most important weapon a person can be armed with today, for it provides concrete factual evidence for one's arguments. When one learned to use data correctly when making one's arguments, nothing can stop one from getting what one wants.

Lucky for me, Westtown provided the platform and opportunities for me to cultivate the skills that are required to master the art of data, including but not limited to mathematics, programming, and critical thinking. The following projects demonstrate my growth in these abilities.

Course Work Required for the Certificate

Certificate Courses Taken Junior Year

- Linear Algebra Adv.
- Multivariable Calculus Adv.
- Microeconomics
- Macroeconomics

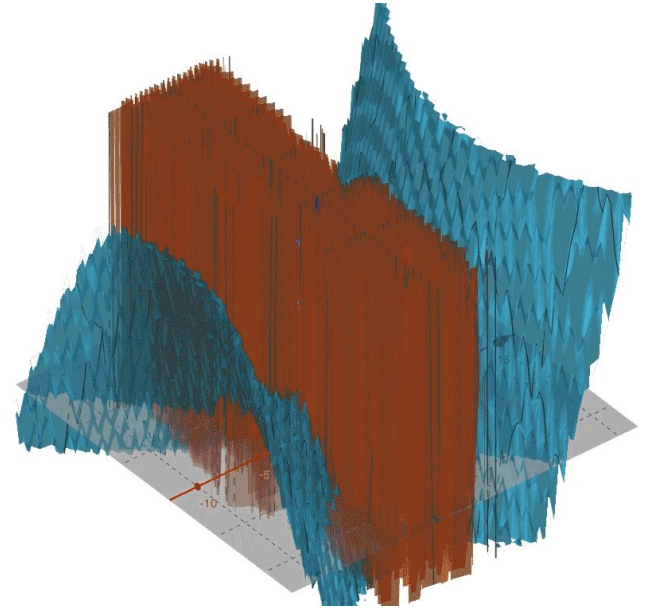
Certificate Courses Taken Senior Year

- Differential Equation Adv.
- Modern Physic Adv.

Project Work Required for the Certificate: 1

In an English Intertextuality project, my team quantified the violence, resistance, and extent of oppression in different works and tried to find a pattern among them with a multivariable function.

This project ignited my interest in using data to support my arguments.



Project Work Required for the Certificate: 2

In the American Mathematics Contest 12, I was placed in the top 5 percentile, tying for second place in Westtown with a score of 96. I was later invited to participate in American Invitational Mathematics Examination but unfortunately didn't make it to the Mathematical Olympiad.

The series of contests drastically improved my mathematical ability and familiarized me with algebraic thinking when approaching problems, a skill that turned out to be extremely useful in later math-related projects.

Project Work Required for the Certificate: 3

In my Latin class, I used data from Google Trends to argue for the importance of the story of Hercules's death. Since the search interest for "Death of Hercules" remained stable despite the decrease in search interest in "Hercules" for the past five years. I started using more rigorous methods to collect and apply data to make my arguments in this project, using real-world data instead of subjectively assigned values.

Not only did this project help me improve my experimental skills, it also helped me to further understand how data can be relevant in humanities subjects like mythology and psychology, preparing myself for my Capstone Project.

Project Work Required for the Certificate: 4

In my Modern Physics class, I explored the mechanism and potential of quantum computing. As I discovered how quantum computers work, I also learned about information theories and its implications on computer science.

The understanding of different types of data and how they can be used in different kinds of problems helped me tremendously in my off-campus immersion project, which required a decent understanding of data structure.

Off-Campus Immersion

Title: Poker Card Detection Model

Description: I have the hobby of performing card magic in my spare time, and I decided to incorporate it in my interest in data science. Starting with a dataset of 5200 images of poker cards, I designed a model that can classify images of 52 poker cards (excluding the jokers) with scikit learn in Python.

In the end, my model achieved an accuracy of 85.4 percent on the test set after optimization.

Extracurricular On-Campus Opportunity

Title: Gansu Illuminators website

I also built and maintained a website for a non-profit organization named Gansu Illuminators with WIX.com website builder.

I managed to gather new members for the organization through this website.



Capstone Project

In the end, the main focus of the certificate is not on the data, but the change it can bring. As a result, I joined the YYGS (Yale Young Global Scholars) program's SGC (Solving Global Challenges) session, in which I designed an innovative mini-lecture, including an interactive website the audience explored as I spoke.

Using my programming skills as a medium of communication, I used my statistical skills as my evidence, pointing out the environmental and social problems our society face today as well as the potential solutions. I drew data from a variety of sources to back up my argument, utilizing my skills to truly make a difference among my peers.

Certificate Process

Key Advisors: Tom Gilbert - Mentor in the Deep Dive Program

Susan Waterhouse - Advisor of Westtown Math Club

Special thanks to Ramin Ramezani, Patrick Steegstra, Wilson Cano, Sam Hu, John Hu, Laly Ali, and Mayssa Abid for working with me on the projects.

