

# Vivaan Singhvi

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## EDUCATION

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### Farragut High School

*Knoxville, Tennessee*

August 2020 – May 2024

*GPA: 4.72/4.0*

## EXAMINATIONS

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**ACT** | 36: 36 Science, 36 Math, 36 Reading, 36 English

**SAT** | 1580: 800 Math, 780 Reading

**AP Computer Science A** | 5

**AP Chemistry** | 5

**AP Physics 1** | 5

**AP Calculus BC** | 5

**AP Calculus BC: AB Subscore** | 5

**AP Statistics** | 5

**AP English Language** | 4

**AP US History** | 4

**AP Research** | 4

**AP Seminar** | 4

**AP Biology** | 5

**AP US Government** | 5

**AP World History** | 4

**AP Human Geography** | 5

**AP Comparative Government** | 5

## EXPERIENCE

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### Oak Ridge National Laboratory Internship | Database Administration

June 2023 – July 2023

- Worked 40 hours a week developing experience in database administration and operation using Python and PostgreSQL.
- Developed crucial workplace skills for the first time.
- Attended dozens of talks and workshops to expose myself to all kinds of professions.

### National Youth Leadership Forum | Medicine and Healthcare Camp

June 2021

- Spent 9 days at an intensive medical camp, in which I participated in activities all day long, such as learning how to suture, how to draw blood, and how to use a tourniquet.
- Watched many presentations on innovations in healthcare (like a surgical robot), careers in healthcare, and various other topics pertaining to medicine.

## COMMUNITY SERVICE — ABOUT 140 HOURS

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### Second Harvest Food Bank | Product Recovery Volunteer

2021 – Present

Worked about 80 hours packaging foods that would be delivered to pantries all over East Tennessee. Examples include bagging cereal and coffee, preparing boxes of assorted foods, and more.

### National Honors Society | Member, Volunteer

2021 – 2023

Worked for about 40 hours total in on-campus projects like school beautification and trash cleanup, and in out-of-campus projects like Halloween parades and Christmas festivals.

## EXTRACURRICULARS

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<b>Programming Personal Projects</b> Spent about 2 hours a day, every day, making more than 50 projects, ranging from web & game development to machine learning to database operations.	2022 – Present
<b>Knoxville Youth Symphony Orchestra</b>   Percussionist Played as a percussionist in 6 concerts, attending weekly 2-hour rehearsals.	2021 – 2023
<b>Drumming Student</b> Spent nine years performing at concerts, developing skills in jazz, orchestral, funk, pop, and rock drumming at various institutions.	2015 – Present

## CLUBS

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<b>Anatomy Club</b>   Vice President Assisted with the preparation of activities for the club and with presentations at club meetings.	2023 – 2024
<b>Mu Alpha Theta</b>   Member, Volunteer, Competitor Competed in several math competitions such as Rocket City Math League, TMTA, and MAO, volunteered for Mini Mu, a math competition at my school for 6 <sup>th</sup> and 7 <sup>th</sup> graders, and tutored about 15 hours.	2021 – 2024
<b>Science Club</b>   Member, Competitor Attended weekly meetings featuring presentations about science and competed in events such as Science Olympiad.	2020 – 2024
<b>Computer Science Club</b>   Member, Volunteer Participated in various activities like solving CodeForces problems, listening to talks about computer science, and more.	2022 – 2024
<b>Health Occupations Students of America</b>   Member, Volunteer, Competitor Competed in fast-paced tests, twice state-level and once internationally. Attended various immersive workshops and volunteered for the club..	2021 – 2023

## ACADEMIC AWARDS / HONORS

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<b>NMSQT</b>   Semifinalist <i>Note:</i> Finalist results not yet released	12 <sup>th</sup> grade
<b>AP Capstone Diploma</b> Awarded for taking AP Research and AP Seminar	11 <sup>th</sup> grade
<b>AP Scholar with Distinction</b> Awarded for an average score of 3.5+ on 5 or more exams.	10 <sup>th</sup> & 11 <sup>th</sup> grade
<b>AP Scholar</b> Awarded for getting a 3 or higher on 3 or more exams.	9 <sup>th</sup> grade

## EXTRACURRICULAR AWARDS / HONORS

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<b>SMC Data Challenge</b>   Best Paper Award Won the award for best solution paper at the Smoky Mountains Computational Sciences and Engineering Conference Data Challenge. The paper is also published.	12 <sup>th</sup> grade
<b>HOSA International Leadership Conference: General Chemistry</b>   1 <sup>st</sup> place Won first place in the National Geographic Learning Academic Testing Center General Chemistry test, competing against students from all over the world.	12 <sup>th</sup> grade
<b>HOSA State Leadership Conference: Medical Math</b>   2 <sup>nd</sup> place Won second place in the Medical Math event, competing against students from all over Tennessee.	11 <sup>th</sup> grade

<b>TMTA: Statistics Test</b>   1 <sup>st</sup> place Achieved a perfect score on the Tennessee Math Teachers Association Statistics exam.	11 <sup>th</sup> grade
<b>TN Regional Science Olympiad: Flight</b>   1 <sup>st</sup> place Won first place in the Flight event for the East Tennessee Regional Science Olympiad.	11 <sup>th</sup> grade
<b>TN Regional Science Olympiad: Chemistry Lab</b>   2 <sup>nd</sup> place Won second place in the Chemistry Lab event for the East Tennessee Regional Science Olympiad.	11 <sup>th</sup> grade
<b>TN Regional Science Olympiad: Detector Build</b>   3 <sup>rd</sup> place Won third place in the Detector Build event for the East Tennessee Regional Science Olympiad.	11 <sup>th</sup> grade
<b>HOSA Upper East Tennessee Regionals: Medical Math</b>   1 <sup>st</sup> place Won first place in the Medical Math event in my region.	11 <sup>th</sup> grade
<b>HOSA State Leadership Conference: Dental Science</b>   5 <sup>th</sup> place Won fifth place in the Dental Science event, competing against students from all over Tennessee.	10 <sup>th</sup> grade
<b>Trinity College of Music Certification</b> Passed the Grade 7 exam for Drumset, equivalent to 8 US Undergraduate college credits.	10 <sup>th</sup> grade
<b>HOSA Upper East Tennessee Regionals: Dental Science</b>   1 <sup>st</sup> place Won first place in the Dental Science event in my region.	10 <sup>th</sup> grade
<b>USA Biology Olympiad</b>   Certificate of Merit Awarded after taking the 50-question test online.	10 <sup>th</sup> grade

## PROGRAMMING SKILLS

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**Languages:** Python, JavaScript/TypeScript, HTML/CSS, PostgreSQL, Java, Shell, C/C++

**Libraries:** OpenCV, Scikit-Learn, React, NumPy, Pandas

**Tools:** Git/GitHub, Unix, Windows Subsystem for Linux, VS Code, Vim

## MAJOR PROGRAMMING PROJECTS / ACTIVITIES

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**SMC Data Challenge** | Python, OpenCV, Scikit-Learn, Shell July 2023 – August 2023

- Worked for dozens of hours on an extensive solution for problem 1 of the Smoky Mountains Computing Sciences Data Challenge 2023: Machine Learning Approaches to High-Throughput Phenotyping.
- Developed expertise in computer vision processes using the OpenCV library and in simple machine learning programs with Scikit-Learn, and strengthened expertise in Python.
- Used machine learning, optical character recognition, and image segmentation models to complete tasks such as label reading, leaf morphology classification, and data analyses.
- Wrote a published, award-winning paper and a research poster presented at the conference.
- Gave a 5-minute lightning talk about the research.

**vivaansinghvi.github.io** | TypeScript, HTML/CSS, React August 2023

- Created my personal website, leaning on an interactive user interface to allow the important information about me to be presented in the best way.
- Learned how to use React, a powerful and convenient JavaScript/TypeScript framework, which I plan on using in future web development projects.
- Improved upon feedback from friends and family to even further improve the user experience.
- **Dozens of other projects that are not reflected here are shown on the website.**

**MandelPlot** | JavaScript, HTML/CSS April 2023

- Created a beautiful visualizer for the Mandelbrot Set, a fascinating set of points generated from repeating a simple function, supporting zooms quickly up to 100,000,000,000 times.
- Developed skills using asynchronous and synchronous operations to optimize performance.
- Got significant familiarity with JavaScript and how to code websites, such as manipulating event listeners and optimizing the user experience.

**CodeForces Problems** | Python, Java, C/C++

January 2023 – Present

- Solved hundreds of problems on the online competitive programming website CodeForces.
- Achieved a personal highest problem rating of 2200, from an 800-3500 scale.

**Soccer Database** | Python, PostgreSQL

February 2023 – April 2023

- Developed the structure for a simple database storing information about most aspects of soccer (leagues, teams, players, awards, matches, etc.)
- Learned how to effectively use PostgreSQL to manipulate a database to add, modify, or interpret data.
- Learned how to use Python in conjunction with a PostgreSQL database in order to use both simultaneously.

**AI Text Detector** | Python, Scikit-Learn

March 2023

- Created a machine learning model to detect if essays were written by a human or an AI.
- Developed important fundamental skills in programming with machine learning algorithms, such as model selection, accuracy testing, data pre-processing, and more.
- Created a dataset containing thousands of AI-generated essays for other people to use in their own projects.

**PUBLICATIONS**

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Singhvi, V., Lunga, L., Nidhi, P., Keum, C., & Prakash, V. (2023). High-Throughput Phenotyping using Computer Vision and Machine Learning. *Smoky Mountains Computational Sciences and Engineering Conference*. <https://doi.org/10.17605/osf.io/r6djq>