

# BRIAN ZHANG

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💻 [niothefirst.github.io/](https://niothefirst.github.io/)

## EDUCATION

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**William Henry Harrison High School, class of 2023, Distinguished Honor Roll (4.0 GPA)** *Aug 2019 - present*

- AP Computer Science (5), AP Biology (5), AP Chemistry (5), AP Physics C Mechanics (5), AP Physics C Electricity and Magnetism (5), AP Calculus BC (5), AP Statistics (5), AP Physics AB (5)
- Taking AP English Literature and Composition, AP English Language and Composition, AP Government
- SAT (1570)

**Purdue University**

*Jun 2020 - Aug 2020, Aug 2022 - present*

- Took CS 251 Data Structures and Algorithms (A), MA 265 Linear Algebra (A)
- Sat in for CS 180 Intro to Computer Science, CS 290-CP1 Competitive Programming I, CS 290-CP2 Competitive Programming II
- Taking CS 240 Programming in C, MA 366 Ordinary Differential Equations Honors
- Plan to take CS 252 System Programming, and MA 375 Intro to Discrete Mathematics in Spring 2023

## EXTRACURRICULARS

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**Computer Science**

- USACO (*Aug 2018 - Mar 2022*), High School Competitive Programming Club Founder (*Aug 2021 - present*)

**Research**

- Code4rena competition for auditing for virtual business applications (*Jun 2022 - present*), Immunefi bounty program for issues in virtual business applications (*Jun 2022 - present*)

**Mathematics**

- Indiana Math League (*Aug 2019 - present*), Mathcounts (*Dec 2017 - Mar 2019*), AMC (*Nov 2017 - present*), AIME (*Feb 2019 - present*), Academic Super Bowl Math (*Jan 2021 - May 2022*)

**Science**

- Academic Super Bowl Science (*Jan 2022 - May 2022*), National Science Bowl (*Jan 2022 - May 2022*)

**Athletics**

- High School Track (*Nov 2020 - May 2022*), High School Cross-Country (*Jun 2022 - present*), High School Soccer (*Jun 2020 - Oct 2020*)

**Other**

- National Honors Society (*Aug 2022 - present*), Piano Lessons (*Jan 2010 - present*)

## SKILLS

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**Programming languages**

- Python, Java, JavaScript, C, and Solidity

**Other**

- OverLeaf, LaTeX

## VOLUNTEER EXPERIENCE

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**Mathcounts Coach***Sep 2019 - Jan 2020*

- Coached Mathcounts Team Members for Battleground Middle School

**High School Competitive Programming Club Founder and Coach***Sep 2021 - Apr 2022*

- Coached students on programming at a competitive stage

**RESEARCH EXPERIENCE**

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**Contributing Author of: *Achieving Both Model Accuracy and Robustness by Adversarial Training with Batch Norm Shaping*** *Jul 2022*

- Studied deep learning image recognition and various training methods to correctly identify images along with malicious small modifications that can be applied so that images are miss-classified
- Developed a new training method for deep learning image recognition using batch normalization to improve accuracy and robustness against the aforementioned acts
- Achieved 0.94 model accuracy and 0.81 robustness against malicious attacks that cause image miss-classification in standard training methods where well known methods such as TRADES yields 0.88 model accuracy and 0.47 robustness
- Gained experience with using OverLeaf, LaTeX
- Researched under the guidance of Shiqing Ma (sm2283@rutgers.edu)

**Co-First Author of : *A Systematic Study of Recent Smart Contract Vulnerabilities*** *Jul 2022 - Aug 2022*

- Studied vulnerabilities in 500+ Smart Contracts, or virtual financial products and services, and provided a new categorization of these issues along with typical symptoms and remedies
- Applied findings to existing Smart Contracts through auditing platforms such as ImmuneFi and Code4rena
- Received a combined total of over \$100k dollars and a personal share of over \$15k dollars through locating 15 issues spanning 10 Smart Contracts that placed an aggregated total of \$22.52 million dollars at risk
- Researched with Zhuo Zhang (zhan3299@purdue.edu), Wen Xu (wen@pwnednomore.org), and Zhiqing Lin (zlin@cse.ohio-state.edu)

**PUBLICATIONS**

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***Achieving Both Model Accuracy and Robustness by Adversarial Training with Batch Norm Shaping*** *Jul 2022*

- Authors: Shiqing Ma (First), Brian Zhang
- [https://github.com/NioTheFirst/Research/blob/main/ICTAI22\\_paper\\_6076.pdf](https://github.com/NioTheFirst/Research/blob/main/ICTAI22_paper_6076.pdf)

***A Systematic Study of Recent Smart Contract Vulnerabilities*** *Aug 2022*

- Authors: Zhuo Zhang (Co-first), Brian Zhang (Co-first), Wen Xu, Zhiqing Lin
- <https://github.com/NioTheFirst/Research/blob/main/cesc22-paper145.pdf>

**WORK EXPERIENCE**

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N/A

**AWARDS**

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**ICTAI'22 Best Student Paper Recognition** *Nov 2022***USACO Silver Qualifier** *Dec 2019***USACO Gold Qualifier** *Dec 2019***AIME Qualifier** *2019, 2020, 2021, 2022***Mathcounts Indiana State 8th place Individual** *Mar 2019***Mathcounts Indiana State 6th place Team** *Mar 2019***Mathcounts Chapter 3rd place Team** *Dec 2017, Dec 2019***Mathcounts Chapter 2nd place Individual** *Dec 2018, Dec 2019***Mathcounts Chapter 2nd place Team** *Dec 2018***Mathcounts Chapter 2nd place Countdown** *Dec 2018, 2019*

<b>Mathcounts Chapter 2nd place Team Coach</b>	<i><b>Dec 2020</b></i>
<b>Code4rena 1st place Audit 7.19.22</b>	<i><b>Jul 2022</b></i>
- Out of 209 teams, worth \$7,659.99	
<b>Code4rena 13th place Audit 6.24.22</b>	<i><b>Jun 2022</b></i>
<b>Code4rena 23rd place Audit 7.29.22</b>	<i><b>Jul 2022</b></i>
<b>ISSMA State Solo Silver</b>	<i><b>Mar 2019</b></i>
- Piano	
<b>ISSMA County Solo Gold</b>	<i><b>Mar 2019</b></i>
- Piano	
<b>ISSMA County Ensemble Gold</b>	<i><b>Mar 2019</b></i>
- Brass Quintuplet	
<b>Academic Super Bowl Math Indiana State 2nd place</b>	<b>May 2022</b>
<b>Academic Super Bowl Science Indiana State 1st place</b>	<b>May 2022</b>
<b>National Science Bowl Indiana Regional 2nd place</b>	<b>Feb 2022</b>
<b>Distinguished Honorl Roll</b>	<b>2019, 2020, 2021</b>
<b>Purdue Half-Marathon Division Runner 10th place</b>	<b>Oct 2021</b>
- 76th place out of 900 runners	