

# ROCCO ZHANG

Vienna, VA 22182

Email: roccozxyt@gmail.com

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## EDUCATION

Thomas Jefferson High School for Science and Technology      GPA: 4.69/4.0 (unweighted 4.0/4.0), top 1%  
Key Courses: AP Calculus BC, Multivariable Calculus, Linear Algebra, AP Computer Science, Artificial Intelligence, Machine Learning, Mobile App Dev, Web App Dev, AP Statistics, AP Physics C, Quantum Physics  
Test Scores: ACT - 36   SAT - 1570  
Skills:      Java, Gradle, Python (TensorFlow, PyTorch, nltk), C++, JavaScript, SQL  
Certificates: Coursera - Machine Learning, Computer Vision

## EXPERIENCE and PROJECTS

- *Research Intern* at Virginia Tech under Prof. Lu - researched bipolar disorder on Reddit using a novel multi-task framework with advanced natural language processing; paper accepted into the IEEE BigData 2023 international conference
- *Research Intern* at University of Maryland, researched a new NLP method under Prof. Zhou for sentence embeddings using mixture of experts and proved it had better performance than baselines.
- Programmed and helped build and design a robot for the FTC competition, wrote and debugged computer vision-assisted autonomous and finite state machine-frameworked driver control programs
- Image classification experiment that compared basic Convolutional Neural Networks, ResNets, and vision transformers on an online dataset
- Helped develop a mobile app called SOLve that provided improved curriculums as supplements to local education, under the BranchOut! Veritas Education summer program

## PUBLICATIONS

- R. Zhang, S. Shailik, A Alhamadani and C.T. Lu, "More than Just a Diagnosis: A Multi-Task Approach to Analyzing Bipolar Disorder on Reddit via DeMHeM", IEEE Big Data Conf. 2023, 5014-5023
- "How do Computers See? A Picture Book Intro to Computer Vision", Picture book author and illustrator

## AWARDS and HONORS

- USA Physics Olympiad (USAPhO) Qualifier; Semifinalist – 2023
- Junior Science and Humanities Symposium (JSHS) invited oral presenter, Fairfax Science Fair 2n
- FTC Robotics: State (Chesapeake) Competition Qualifier and Finalist, Connect and Inspire Awards
- AIME (American Invitational Mathematics Exam) Qualifier
- USA Computing Olympiad (USACO) – Silver Division
- Science Olympiad Nationals: 3<sup>rd</sup> place in Astronomy and Circuit Lab (2021)

## ACTIVITIES

- FTC Robotics Team 1407 (2021- present) – head programmer, builder
- TJHSST Physics Team (2022-present) – Officer
- TJHSST Senior Computer Team / Machine Learning Club (2021- present)
- TJHSST Public Forum Debate (2021-2022)
- Scouts BSA (2018-present) - Eagle Scout, Patrol Leader, Troop Guide
- Swimming - TJHSST Varsity Team (2022-present), The FISH Swim Club (2015-present)

## VOLUNTEER and SERVICE

- Founded and organized a STEM enrichment program for kids with special needs, led the efforts of community outreach, curriculum design, logistics, and promoting learning through hands-on projects
- *Instructor/Coach* of the Adapted Swimming Program; taught swimming to kids with varying intellectual disabilities to train them to compete in Special Olympics (2022-present)
- *Professional Swimming Instructor* at Spring Hill REC Center (2023-present)
- Taught a Python programming class series for middle school students
- Scouts BSA – helped run/lead food drives, fundraiser campaigns, and service projects that include improvement or conservation projects for local schools and community centers (2018-present)