**ROCCO ZHANG**

Vienna, VA 22182 Email: roccozxyt@gmail.com

**EDUCATION**

Thomas Jefferson High School for Science & Technology (TJHSST) – Class of 2025, rising senior

GPA: 4.60/4.0 (unweighted 4.0/4.0)

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, Electrodynamics

Test Score: ACT - 36 SAT - 1570

Skills: Java, Gradle, Python (TensorFlow, PyTorch, nltk), C++, Web Dev (Javascript, HTML, CSS, SQL, etc.), Mobile Dev (Android)

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
* 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
* Built model to perform vehicle recognition using U-net convolutional neural networks and transfer learning; implemented an object-detection algorithm
* Did an 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. Sarkar, A. Alhamadani and C. Lu, "More than Just a Diagnosis: A Multi-Task Approach to Analyzing Bipolar Disorder on Reddit via DeMHeM," in 2023 IEEE International Conference on Big Data (BigData), Sorrento, Italy, 2023 pp. 5014-5023. doi: 10.1109/BigData59044.2023.10386934

**AWARDS and HONORS**

* USA Physics Olympiad (USAPhO) Qualifier; Semifinalist - 2023
* FTC Robotics: State (Chesapeake) Competition Qualifier and Finalist, Connect and Inspire Awards
* AIME (American Invitational Mathematics Exam) Qualifier
* USA Computing Olympiad (USACO) – Gold Div.
* National Science Olympiad: 3rd place in Astronomy and Circuit Lab (2021)

**ACTIVITIES**

* FTC Robotics Team 1407 (2021- present) – head programmer, builder
* TJHSST Senior Computer Team / Machine Learning Club (2021- present)
* TJHSST Physics Club (2022-present) – Officer
* 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)