

# Rishi Bala

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## Education

**Newark Academy**, Livingston, New Jersey

September 2018 – June 2025

- IB Diploma Candidate
- AP Scholar: AP US History, AP Calculus AB/BC
- 36/36 ACT
- Class of 2025

## Extracurriculars

**Competitive VEX Robotics**

September 2020 – Present

*Captain, Lead Builder, Design/CAD, Engineering Notebook*

- Competed through Robot Revolution in Summit, New Jersey.
- Captained my team to a successful season every year, putting in thousands of hours of work.
- In charge of the design and construction of every robot, using CAD software such as Autodesk Fusion360 and Inventor.
- Singlehandedly created and produced an award-winning engineering notebook each season.
- Dozens of regional and global awards.
- Highlights: 2022 Vex Robotics Middle School World Finalist, 2023-24 New Jersey 2<sup>nd</sup> Place, 2x Worlds Qualifier

**Newark Academy Big Band**

September 2021 – Present

*Lead Drummer (Selected through an audition process)*

- Led the rhythm section as the first-chair drummer, playing an extensive repertoire of jazz classics.
- Competed with a very well-respected jazz program, traveling across New Jersey for competitions and jazz festivals.
- Placed top 3 in the NJAJE Jazz State Finals every single year.

**Newark Academy Yearbook**

September 2022 – Present

*Assistant Proof Editor (10), Lead Proof Editor (11) (Selected through an application)*

- Oversaw the management and proofreading of the annual school yearbook.
- Collaborated with other staff members and faculty advisors to facilitate timely and error-free production.
- Led a team of assistant proof editors and other staff members to maintain high editorial standards.

**Minuteman Newspaper**

October 2022 – Present

*Staff Writer (10), Editor (11) (Selected through an application)*

- Coordinated with Editor In-Chief's and faculty advisors to produce 4-5 completed sets of articles.
- Supervised and guided other staff writers throughout the year.
- Personally wrote 3-4 articles per year and edited/proofread 10-15 others written by staff writers.

**Curriculum Committee**

September 2023 - Present

*Grade Representative (Selected via school administration and application essays)*

- Collaborated with Department Chairs and school administration to shape the Upper School curriculum and assess new course proposals.
- One of only two students chosen to represent the entire grade.

**Newark Academy Boys Tennis Team**

September 2021 - Present

*Junior Varsity (9-11)*

- Trained alongside 5-star and Blue-Chip athletes.
- Competed in state-wide tournaments and local matches.

**Cricket Club**

September 2021 - Present

*Member (9-10), Vice-Captain (11), Captain (12)*

- Introduced and educated students about cricket strategies and skills through weekly practices and scrimmages.
- Created an annual faculty v. student match in the week before Spring Break and oversaw the yearly cricket banquet tradition.
- In charge of recruiting new members, collaborating with faculty advisors and other club leaders, and communicating with the student body.

**Clubs Committee**

September 2023 - Present

*Staff Member (11-12) (Selected through an application)*

- Assisted in the establishment and design of the Clubs Committee, overseeing all Newark Academy clubs and activities.
- Collaborated with student and faculty leaders to plan and coordinate club-related initiatives.
- Analyzed and promoted student interest in Newark Academy's extracurricular programs.

## Research, Summer, and Job Experiences

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### PACT – Program in Algorithmic and Combinatorial Thinking

Summer 2023

*Selected through an application*

- Studied discrete mathematics and theoretical computer science under Prof. Rajiv Gandhi.
- Explored topics such as combinatorics, probability, graph theory, and algorithms, to name a few.
- Generally based around the UPenn course CIS160.
- Received additional lectures from guest professors.

### Robotics and Programming at NJIT

Summer 2022

*Selected through an application*

- Accepted into a program designed to enhance prior robotics experience, covering multiple programming languages and electronic components.
- Delved into biomedical engineering, advanced mathematics, computer applications, and communications.

### VEX IQ Instructor

November 2021 – Present

*Teacher, Judge, Live Competition Help*

- Worked/volunteered through Robot Revolution in Summit, New Jersey.
- Volunteered year-round to in elementary and middle school robotics competitions as Head Referee and Judge.
- Mentored younger VEX IQ students throughout the year, teaching basic robotics skills and block coding.
- Introduced elementary and middle school students to VEX IQ hardware and block coding every summer.

## Projects

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### VRC Scouting Website

August 2022 – October 2022

[Github Repository](#) / [Website](#) / [Demo](#)

- Developed a live competition scouting tool that ranks active VRC (VEX) teams to assist with scouting and alliance selection.
- Utilizes an algorithm based on thousands of GET requests to create a ranking and overall ‘score’ for each team, allowing for extremely efficient in-person scouting.
- Displays each team’s features and all their awards/statistics, enhancing scouting efficiency.
- JavaScript, HTML5, CSS3
  - Node.js, Express.js, EJS, MongoDB, Mongoose, AWS EC2
- Website: [rbalascouting.com](https://rbalascouting.com)
  - Username: rba25
  - Password: 4610JPassword

### JavaXchange

July 2023 – August 2023

[Github Repository](#) / [Demo](#)

- Developed a multithreaded mock stock market, recording transactions, matching BUY and SELL orders, and communicating with each individual trading bot through serialization and deserialization.
- Allows for trading bots to run different “strategies” in an attempt to generate the most profit.
- Used the Twelve Data API to generate a data file containing the price of AAPL for every minute between June 2021 and January 2023.
- Parsed this .txt file to create a Market Making Bot which sends a new order based off each AAPL price point every 10ms, essentially creating the simulation for the other trading bots.

### VEX Robotics CAD and Documentation

May 2020 – June 2025

[Renders/Files](#) / [Engineering Notebooks](#)

- CADded and designed my team’s robot prior to and during the season using industry-standard CAD software.
- Designed a new robot each season, with several prototype stages in between.
- Used software such as Autodesk Fusion360, Autodesk Inventor, AutoCAD, Protobot.
- Independently documented all progress, iterations, and design steps in my team’s engineering notebook.

## Technical Skills

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**Languages:** Java, Python, JavaScript, HTML, CSS, VEXCode Pro C++ V5, PROS

**Skills:** AWS, Node.js, Express.js, MongoDB, Crontab, Multithreading, CAD

**CAD Software:** Autodesk Fusion360, Autodesk Inventor, AutoCAD, Protobot