Rohan Ramkumar

Student: The Harker School (Class of 2025)

RELEVANT SKILLS

- Fluency in C++, Java, Mathematica, Python, and Assembly
- Advanced courses in collegiate-level fields of mathematics and science
- Group Work Experience
  - Built a Quantum Neural Network and created a video presentation about it as part of MIT's Quantum Software Course
  - Group project and presentation on modeling the BLM movement with Dynamical Systems for Differential Equations II Course
  - Researched and worked with a team for a presentation of a group paper on noise reduction algorithms for Signals and Systems Course
  - Group project for creation of a Magnetic Accelerator as a culmination of AP Physics C Electricity and Magnetism coursework and presented it to the class.

ADVANCED COURSEWORK

- Computer Science: AP Computer Science, Data Structures, Honors Compilers and Interpreters, Honors Neural Networks
- Math: AP Calculus BC, Honors Multivariable Calculus, Honors Differential Equations I, Honors Advanced Topics: Signals and Systems, Honors Differential Equations II, Honors Information Theory I (in progress), Honors Information Theory II (Spring 2025), Honors Robot Kinematics Software (Spring 2025), Linear Algebra, Analytic Number Theory, Complex Analysis I (Winter 2024), Complex Analysis II (Spring 2025)
- Physics: AP Physics C Mechanics, AP Physics C Electricity and Magnetism, Seminar in Modern Physics (in progress), Physics III: Vibrations, Waves, and Optics (in progress)
- AP Chemistry

ACTIVITIES

Student – The Harker School
High School Senior
- Weighted GPA: 4.58/4.8
- Unweighted GPA: 3.97/4.0
- Completed most rigorous mathematics, computer science, and physics curriculum offered

MIT Beaver Works Summer Institute – Quantum Software
Summer 2024 | Grade 11
- Studied college-level Quantum Computing and Software under MIT Lincoln Laboratory
- Course consisted of study of advanced Quantum Computing theory and algorithms including Grover's search algorithm, Shor's algorithm and Quantum error correction.
- Daily guest lectures and seminars from academic and industry experts about applications of Quantum Computing in a wide variety of fields ranging from Quantum Networking to pharmaceutical drug synthesis.
- Implemented and created a Quantum Neural Network in Python using the Gradient Descent Algorithm and Qiskit as a capstone project working in a group of 4 students.

Analytic Number Theory
Spring 2024 | Grade 11
- Completed the advanced university-level Analytic Number Theory class at Euler Circle, Palo Alto
- Wrote and presented a 10-page research paper about Artin's Conjecture: https://github.com/RohanRPiano/Resume/blob/main/Artin_Conjecture.pdf

Independent Expository Research
Summer 2023 | Grade 10
- Researched in-depth about Elliptic Curves at Euler Circle summer research program. Worked under the guidance of a professor and TA to study the topic and write the research paper.
- Wrote a 30-page paper and a gave a presentation about Torsion Points on Elliptic Curves: https://github.com/RohanRPiano/Resume/blob/main/Torsion_Points_Paper.pdf

AwesomeMath Projective Geometry
Summer 2022 | Grade 9
- Studied college-level affine, inversive, and projective Geometry in the AwesomeMath program. Created proofs for advanced topics of geometry.

Piano Excellence
2011 – PRESENT | Grades Preschool-12
- Currently student in the San Francisco Conservatory of Music (SFCM) Pre-College program
- Studied advanced repertoire including works of Bach, Beethoven, Chopin, Liszt, Rachmaninoff, and Ligeti
- Attained MTAC Advanced Level (2022), State Convention Recital (2023) and Jury Panel Honors Award for State Convention Recital (2024)

Taekwondo - *3rd degree Black Belt*
2011 – PRESENT | Grades Preschool-12
In addition to volunteering as an instructor (more details below), I have earned a third-degree Black Belt through over 13 years of training, discipline, and hard work.

Conductor –*Conductor in Harker School Orchestra*
2022 – PRESENT | Grades 10-12
- Led many weekly rehearsals in Harker Conservatory's 90-student Orchestra, conducting works by Beethoven, Debussy, Dvorak, Schumann, Shostakovich, Price, de Falla, and more.
- Conducted Christmas special Recital at Harker's Big Assembly Day
- Conducted in public events, such as Graduation, MLK Day Legacy Celebration, and Spring Orchestra Concert

Music Creation Club – *Vice President*
2023 – PRESENT | Grades 11-12
- Club that focuses on using digital audio workstations (DAWs) to compose original music. Tools used include Logic Pro, Musescore, Abelton Live
- Helped facilitate, coordinate, and run many club meetings throughout the school year

Composer
2020 – PRESENT | Grades 8-12
- Studied composition for 6 semesters in the SFCM Pre-college program
- Studied Technical Composition, Film Scoring, and Sound Design for 4 semesters using Ableton Live and Logic Pro
- Composed many different styles of music, ranging from film scoring, to chamber music, to choral music
- Compositions have been debuted by professional musicians at public concerts

Abacus-Based Mental Math – *8th degree Black Belt, Grand Champion*
2014 – PRESENT | Grades 2-12
Over the last 9 years, I have participated in an abacus-based mental math program under the League for Soroban Education of America, in which I learn how to do addition, subtraction, multiplication, division, and square roots as mental math calculations performed rapidly. I currently have an 8-Dan (8th degree black belt) in mental calculations and have also achieved a grand champion title in annual competitions.

VOLUNTEER EXPERIENCE

Taekwondo Instructor
2018 - PRESENT | Grades 6 - 12
- Led classes to teach students, ranging from beginners to black belts
- Over 550 hours in total
- Received three Presidential Volunteer Service Gold Medals and a commendation letter from the President

Performer in Tri-M National Honor Society
2021 - PRESENT | Grades 9 - 12
- Performed piano repertoire in recitals at various senior centers, including the Cupertino Senior Center and the Mid-Peninsula Widows & Widowers Association
- Over 20 hours

ACADEMIC AWARDS & HONORS

- 4-time National Latin Exam Gold Medalist (7th-10th grades)
    - Awarded a copy of Caesar's Civil War, an award which less than 0.5% of participants received
- Gold Medal in National Latin Etymology Exam (9th grade)
- Various Medals in Mythology, Roman Civilization, and Vocabulary exams (6th-11th grades)
- Achievement Roll in AMC 12 Exam as a middle schooler
- AIME Qualifier

ADDITIONAL AWARDS & HONORS

- Certificate of Merit Advanced Level Convention (Grades 10, 11)
- Certificate of Merit Panel Honors (Grade 11)
- Love of Learning Award, The Harker School (Grades 8-11)