

Neel Umesh Mantri

Chennai, Tamil Nadu, India

neel.mantri25@gmail.com — [linkedin.com/in/neelumeshmantri](https://www.linkedin.com/in/neelumeshmantri)

EDUCATION

DAV Boys Senior Secondary School, Gopalapuram

Mathematics, Computer Science, Physics, Chemistry, English

Apr 2018 – Apr 2026

Indian Institute of Technology, Madras

Research Science Initiative - Chennai Summer Program 2025, Mathematics and Sciences

Apr 2025 – Jun 2025

Raising A Mathematician Foundation (RAM)

RAM Training Program (2022-24), Math.biz (2024), Quantum Wonder 2024, ROOTS 2024

May 2022 – Present

TEST SCORES

SAT: 1530 (Math: 800, R&W: 730)

Cambridge: CAE C1 Advanced (206/210), (C2 Proficiency) (A Grade)

AP Scholar with Distinction — Computer Science A (5), Calculus AB (5), Physics C Mechanics (5), Physics C E&M (4), Statistics (4)

CBSE 10th: 99% (Math: 100, Sanskrit: 100, English: 99, Science: 98, Social Science: 98)

EXPERIENCE

DAV Boys Senior Secondary School, Gopalapuram — School Pupil Leader (Head Boy)

Jun 2025 – Apr 2026

- Unanimously elected
- Heading Mathematics Club, Science Club, Debate Club (Founder), Quiz Club, Linguistics Club (Founder)
- Invited eminent scientists and professionals for guest lectures
- Organizing the school's first ever district level science fair and quiz competition

Indian Institute of Technology Madras (IIT-M), Chennai — Student Intern

Apr 2025 – Jun 2025

Research Science Initiative (**RSI**)- Chennai Summer Program 2025

- Selected in the top 40 among over 800 applications
- Over the course of the 6 week long residential program, I engaged in lectures from eminent scientists like [Dr V Balakrishnan](#) and [Dr Mangala Sunder Krishnan](#), laboratory experiments, and independent research project.
- [Project: Partial Differential Equation of Heat Diffusion](#)

Cognileap Eduventures LLP — Student Intern

Jul 2025 – Sep 2025

- Developed a Natural Language to SQL Generator using ChatGPT API and Supabase, enabling non-technical users to query databases conversationally
- Helped enhance the project with KNN indexing to provide intelligent, semantic query suggestions based on past queries
- Assisted in developing a full-stack app with Next.js frontend, FastAPI backend and integrated with Supabase
- Helped containerize the backend using Docker and deployed in Render while frontend was hosted on Vercel

RESEARCH EXPERIENCE

[Tana-prastara and Mathematics Behind It](#)

2025

Published in [Scientiae Mathematicae Japonicae \(Japanese Journal\)](#) (E-book Vol 87 2), presented at AIMER Conference 2025

- Conducted interdisciplinary research exploring rhythmic permutations in ancient Indian music using combinatorics
- Developed novel approaches to understanding *Tana prastara* and rediscovered factorial number system through *Khanda Meru* (from *Sangita Ratnakara*)

[Solving Optimization with Grover's Algorithm and Investigating the Oracle Phase](#)

2025

Presented at AIMER Conference 2025

- This research was to analyze if Grover's Algorithm can solve various optimization problems, where Oracle was the main control variable to present the optimization problems also in the form of search problems.

- Dealt with unstructured search, Satisfiability problems (Dinner Party problem, Pathfinding problem) and Countered the claim by [Liu24] “Time Complexity of the Oracle Phase in Grover’s Algorithm”

Recreational Mathematics in School Curriculum

2024

Presented at AIMER Conference 2024

- Presented benefits of recreational learning and implementation methods in Indian schools
- Demonstrated initial prototype of NUMERICO mathematical board game

COURSES / PROGRAMS / WORKSHOPS

- **Math.biz 2024** (Senior Mid Caps) — Under [Dr Hari Ramasubramaniam](#), [Dr Keerti Pendyal](#), [Harish Menon](#) — Introduction to regression and data analytics; Financial Derivatives; Market structures; Data Visualization using R; Mathematical modelling of risk; Introduction to Portfolio Theory; Asset management
- **RAMTP 2022-2024** (Batch D - Advanced) — 2024 - Probability by [Dr Reshma Menon](#); 2023 - Blockchains by [Aadityan Ganesh](#); 2022 - Interdisciplinary cum general introduction to Mathematics and proof techniques
- **PACT** (Rutgers/Princeton) — Under [Dr Rajiv Gandhi](#) (Rutgers University Camden) — Discrete Mathematics, Proof techniques, Graph theory, Combinatorics
- **Vedic Mathrix 2024** under [Vinay Nair](#) — Introduction to ancient Indian musicology
- **Quantum Wonder** — Under [Dr Hariom Jani](#) (Oxford University) — Fundamentals of Quantum Mechanics, Expository research on "Scanning Tunneling Microscope"
- **AI in Physics Workshop** — Indian Association of Physics Teachers (IAPT)
- **Educational Games Development Workshop** — Aarhus University Denmark, European Conference on Games Based Learning (ECBGL)

HONORS & AWARDS

- **Best Outgoing Student** (DAV Boys Senior Secondary School, Gopalapuram, 2025)
- Received a letter of appreciation from **Prime Minister of India** Shri Narendra Modi ji congratulating for accomplishment in Pariksha Pe Charcha
- **Bebras Computing Challenge:** All India Rank 3 (2022), All India Rank 2 (2023, 2024)
- **Technothon by IIT Guwahati:** All India Rank 2 Prelims, 2nd place Crowned Quest Mains 2024
- **NUMERICO:** 1st place International Educational Games Competition (ECGBL, Denmark, 2024) - Only Indian student; 2nd place KVRSS Spark Innovation Ganitam Awards (All India)
- **Stanford Math Tournament 2025** (Honourable Mention)
- **Codessey'25** Winner in the flagship event Binary Blitz of the largest school codathon in Chennai
- **World Scholar's Cup:** 24 gold medals, 10 silver medals, 5 trophies (Chennai Regionals 2022-24, Dubai Globals 2022)
- **Model UN Awards:** 5 Best Delegate awards (GMUN'24, IMUN'23/'24, PSMUN'23, SANMUN'23), 5 High Commendations, 2 Special Mentions
- **Debate:** 2nd place Rhetoric'23, Semi-finalist Tamil Nadu Debating Championship (IIT Madras), ISDC (Indian Schools Debate Championship) Selection
- **Academic Competitions & Olympiads:** Aryabhatta Math Olympiad Gold Medalist, Top 900 in India for International Mathematics Olympiad selection, Top 50 in India for International Linguistics Olympiad selection, 2nd place Science & Tech Quiz (TN Govt), PiMO Rank 1 (4000+ students), Ramanujan Math National Competition (Merit Holder)
- **Creative Writing:** 3rd place Government of India Essay Writing Competition, Fever Junior Championship Best in State
- **Competitions:** Quarter-finalist Climate Science Olympiad, Top 32 in G20-THINQ 2024 (The Indian Navy Quiz)

SOCIAL SERVICE

[Blue Cross of India](#) — *Volunteer*

Oct 2021 – Present

- Trained in tactical animal rescues and darting techniques; contributed to 100+ rescues

- Assisted in crematorium records, token organization, cattle shed and puppy kennel maintenance
- Volunteered for 500+ hours
- [Recognized as the Best Volunteer of the Month \(Oct'24\)](#)

Raising A Mathematician Foundation — *Student Volunteer*

- Volunteer for ROOTS Camp: aiding faculty, managing sessions, writing synopses, clearing student doubts, mentoring students *Nov 2024*
- Invited to Volunteer for All Girls Maths Nurture Camp (AGMNC) *Dec 2025*

Reap Benefit — *Student Volunteer*

Jun 2022 – Sep 2022

- Conducted neighbourhood heroes' survey and COVID impact interviews with Inner Wheels Club

LEADERSHIP & INVOLVEMENT

- **MUN Chairperson:** Co-Chair IIMUN 2024 (largest committee Niti Aayog), Chair HeartsMUN 2024, Main Chair VMEMUN 2023 (80+ delegates), Co-Chair ChinMUN 2023 (ICC), Guest Chairperson UNIO AMJMUN 2024
- **MUN Secretariat:** Head of Editorial/Content - Kartavya MUN, Ethereal MUN, Delcor MUN 2024, Ascent MUN 2025
- **Chhatra Salaahkaar Veer Badge Holder** (2024-25): Student Advisor
- **Master of Ceremony:** Annual Athletic Meet DAV Group of Schools (8 schools), Annual Day, Sports Day, Independence Day

PROJECTS & INTELLECTUAL PROPERTY

- **NUMERICO Board Game**
 - Applied for Copyright (in India)— Under Review
 - Winner of International Educational Games Competition 2024 (EDGBL, Denmark)
 - Designed educational math board game teaching mathematical concepts through gameplay
- **Differential Heat Equation**
 - Done under guidance of [Prof. Dr. Venkatabalaji TE](#)
 - This report examines the derivation, solutions and various applications of the partial differential heat equation.
 - It derives the heat equation in n-dimensions, and shows solutions through two different methods- Fourier Series and Finite Difference Method.
 - There is also a Python code involving the Explicit method graphing temperature distribution over time.
 - Exploring the real life applications, using Wolfram Mathematica, we have critically simulated, modelled and analyzed heat flow in various parts of an automobile.
 - We have modified the heat equation by adding the terms of advection and vorticity heating.
- **AI Powered Vaping Detection Device:** Design Patent (in India) — Under Review
- **Mars Self Sustaining Eco System model:** 3rd in state in exhibition at Tamil Nadu Science and Technology Centre
- **Enhanced Weathering:** 2nd place in Eco Fair

SKILLS & INTERESTS

Programming: Python, HTML, CSS, JavaScript — **Tools:** Mathematica, LaTeX, Git, Qiskit

Languages: English, Hindi (Native); Tamil (Professional); Marathi, Marwari, Sanskrit

Music: Self-trained flutist (performances at RAMTP, Math.biz, World Scholars Cup, school events and volunteering in Blind Schools and hospitals)

Sanskrit: 100% CBSE Board Exam Class 10, Distinction in Pravesaha & Parichayaha exams

ALL BLUE LINKS ARE CLICKABLE