

# Yash M. Mehta

Indian Institute of Science, Bangalore

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## EDUCATION

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### Indian Institute of Science, Bangalore

August 2017 - Present

Bachelor of Science (Physics Major)

CGPA : 8.8/10.0

### Senior Secondary Education (CBSE)

upto March 2017

Science Subjects : 94.0%

## RESEARCH EXPERIENCE

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### TIFR, Mumbai

Dec 2018 - Dec 2019

*Advisor: Prof. Sourav Chatterjee*

- Developed an assembly of codes (Python) to test whether a globular cluster's tidal potential is a responsible factor for lowering of binary fraction in such clusters, and how this varies with parameters.
- Modified the code of COSMIC-popsynth (FORTRAN and Python) to generate and evolve binary star systems of input initial age, mass distribution, time period distribution and other orbital parameters.

### IIST, Trivandrum

Dec 2017

*Advisor: Dr. Sarita Vig*

- As a part of a group, calibrated and edited radio interferometric data from GMRT for the construction, display and analysis of an astronomical image with Fourier synthesis methods, using AIPS software.
- Estimated various parameters of the HII region and the corresponding massive YSO present in the radio image constructed; and refined our conclusions using the IRAS infrared images of the same region.

## ACADEMIC AWARDS AND ACHIEVEMENTS

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- Simon Marais Mathematics Competition merit list 2020
- National Initiative on Undergraduate Science (NIUS) Program in Physics 2018-2019
- Madhava Mathematics Competition merit list 2018, 2019
- Ranked 493<sup>rd</sup> in Joint Entrance Examination, taken up by 1.2 million students 2017
- Infosys Foundation felicitation and Cash prize for Olympiad medallists 2016
- **Silver Medalist** at the International Olympiad on Astronomy and Astrophysics (IOAA) 2016
- **Best Data Analyst** and Team Member Qualification at Astronomy Selection Camp 2016
- Ranked 42<sup>nd</sup> in KVPY, earned fellowship and financial award as a student in basic sciences 2016
- Qualified for INMO (2015, 2016), INAO (2016, 2017), INPhO (2017) and INChO (2017) 2015-2017
- Country-wide rank 1 in IIT-Guwahati's **Technothlon** 2015, 2016
- Country-wide rank 1 in SOF **International Maths Olympiad** 2009, 2013

## COMPUTER SKILLS

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### Languages

Python, JavaScript, C, C++, HTML, Go\*, FORTRAN\*, Assembly\*

### Libraries

Numpy, Scipy, Pandas, Tensorflow, Tkinter, Selenium, Sockets, etc.

### Web & Databases

CSS, Flask, Django\*, React, Vue\*, MySQL, PostgreSQL, SQLite, etc.

### Other Tools

LATEX, Git, Octave, SciDavis, Matplotlib, MATLAB\*, Heroku, etc.

### Operating Systems

Windows, Linux

## MENTORING EXPERIENCE

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### Teaching Assistant (Code/Astro Workshop, Caltech)

2021

Responsible for curriculum review for teaching fundamental software engineering skills and best practices for building sustainable open-source packages for the workshop to be held on June 21-25.

### Student Facilitator (Selection and Training Camp for IOAA / GeCAA, HBCSE, Mumbai) 2018 - 2020

Mentored about 30 country-wide top high school students at the orientation cum selection camp to select the national team for the International Olympiad on Astronomy and Astrophysics (IOAA) in 2018 and 2019; and mentored the selected team of 5 in 2019 (IOAA) and team of 10 in 2020 (GeCAA).

## LEADERSHIP EXPERIENCE AND POSITIONS OF RESPONSIBILITY

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### Member of National Astronomy Olympiad Resource Generation Camp

Oct 2018 - Present

Responsible for generating candidate questions for the Indian National Astronomy Olympiad and the Selection Camp of team India for the International Olympiad on Astronomy and Astrophysics.

### Convener of Rangmarch - IISc Dramatics Club

Sep 2018 - Sep 2019

Co-organised a rehearsed reading as the opening performance at the Rangashankara Theatre Festival.

### Founder and Convener of IISc Astronomy and Astrophysics Club

Dec 2017 - Aug 2019

Invited talks from distinguished speakers such as the Director of Nehru Planetarium Delhi, initiated an astronomy outreach programme for school students in Bangalore, and hosted sky & telescope sessions.

### Cofounder and Finances & Sponsorship in-charge of Cube Fiesta Surat

Jan 2016 - Present

Cofounded a non-profit organisation for promoting speedcubing as a popular sport by organising annual speedcubing competitions and workshops in Surat, affiliated with the World Cube Association.

## CONFERENCES AND POPULAR TALKS

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### The Stellar Structure (Ensemble - IISc Physics Club)

Sep 2018, Jan 2021

Demonstrated the equilibrium model of a star under convective and radiative modes of transfer, using which, motivated stellar evolution on the HR diagram and the existence of variable stars.

### Introduction to Astronomy 1 - 3 (Astrae - IISc Astronomy Club)

Jan - Mar 2018

Co-delivered a series of talks on topics ranging from positional astronomy to the distance ladder to night sky observation; as an introduction to astronomy in the newly formed Astronomy club.

### Encounters on the Random Walk (Student Seminars, IISc Mathematics Dept.)

Nov 2017

Presented a generalised solution of the N-dimensional Random Walk problem, and subject to certain assumptions, put forth examples of its utility in determining the number of species in a certain habitat, and in optimally searching for misplaced sandals.

### Solving a Rubik's Cube using 5 Faces (National Mathematics Conference, Bhopal)

Dec 2015

Motivated how the group of all move sequences on a Rubik's cube generated by six moves - R, L, F, B, U and D, can also be generated by just five of these moves.

## MISCELLANEOUS

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- **Guinness World Record** for the fastest time to solve a Rubik's cube in team of two in January 2019
- Reached the Top Rank (1 Kyu) in Codewars, a popular competitive coding platform
- Silver at 4x4x4 blindfolded and Bronze at 5x5x5 blindfolded speedcubing at **Indian Nationals 2018**
- Qualified for Inter-IISER Sports Meet for 4x400m relay (2018, 2019), 400m (2019) and long jump (2019)
- Created speedsolving methods for 3x3x3 (Mehta), One-handed 3x3x3 (YruRU), etc.
- Passed (1<sup>st</sup> class or better) 5 years of Tabla, 3 years of Harmonium and 3 years of Indian classical vocals