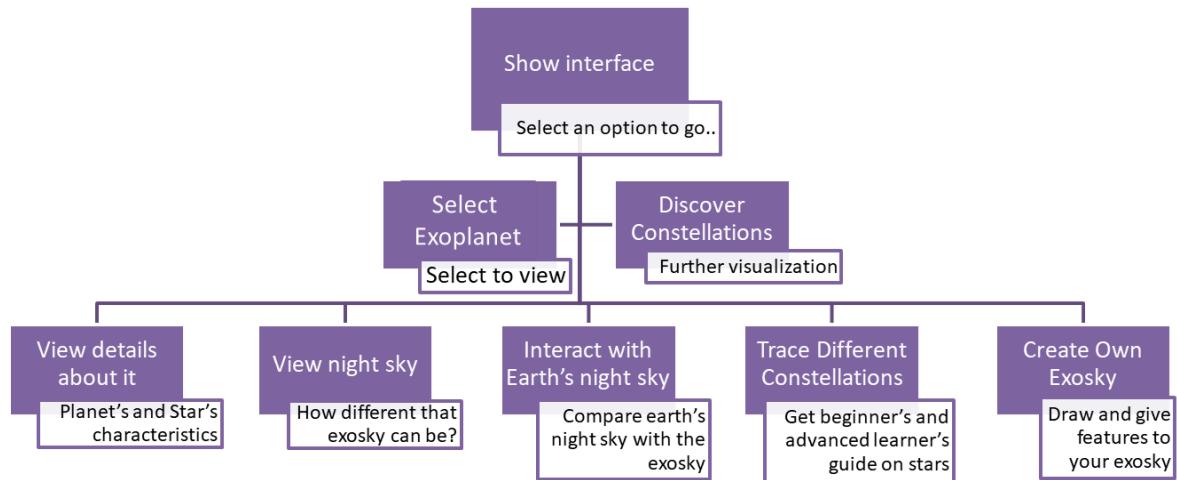
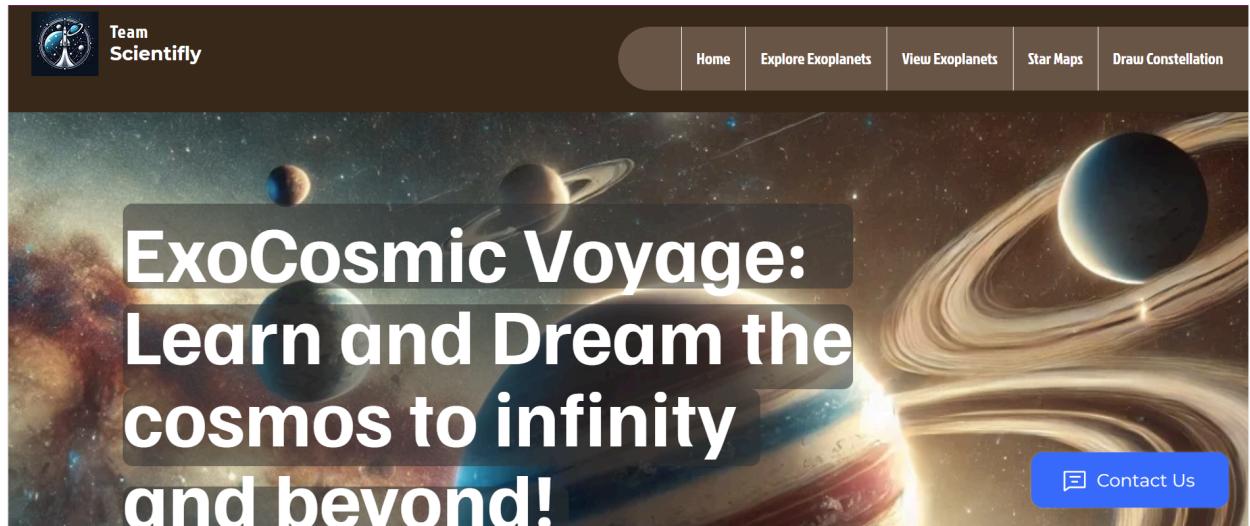


- A chart for the features of our website:

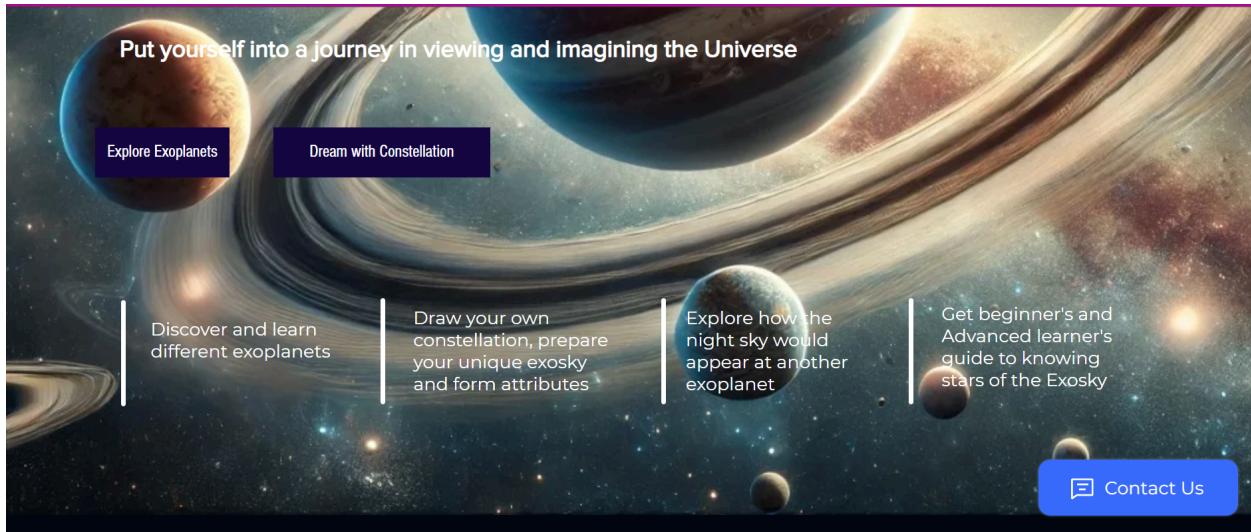


- Features of our website in detail:



The user can get different options regarding exploring astronomy with the menu on top right, which shows 4 options for various

interactivity: Explore Exoplanet, View Exoplanet, Star Maps and Draw Constellations.



The user can also know about the key features about the website to get a quick overview. Besides, we are having 2 options(explore exoplanets and dream with constellation) as the primary interactivity elements; which a user can access by clicking on the navy blue colored buttons.

Choose an Exoplanet!

Out of the 5500+ exoplanets so far discovered by NASA, there are some notable ones you must not miss to have in-depth knowledge about! Choose any exoplanet below to embark on your travel to the exoplanets!

Kepler-186f

HD 20782b

YZ Ceti b

K2 136b

TOI 4201b

WASP-76b

Proxima Centauri b

Gliese 1132b

Wasp J1407b

Kepler-10b

Kepler-7b

HD 189733b

Ross 128b

By either clicking on “explore exoplanets” button or “view exoplanets” from menu on top right of home page, the user can get navigated to a page from where they can select any exoplanet from a wide range of collections of exoplanets, prepared with the help of NASA Exoplanet Archive.

Kepler-186f



- Kepler-186f is situated 579 light years from Earth.
- In its planetary system, it is situated at a distance of 0.432 AU away.
- It has a planetary orbit period of 129.94441 days. Its atmospheric condition is thick, carbon dioxide, warm enough to allow liquid water to flow on its surface.
- It has a radial velocity amplitude of 178 and an eccentricity of 0.04.
- Additionally, it has a semi-major axis covering 0.432.

Some Information about It's Host Star(Kepler-186):

Position (RA/Dec): 19h 54m 36s / +43° 57' 18"	Radial Velocity: ~4.7 km/s
Brightness: Apparent magnitude 14.625	Parallax: ~5.02 mas
Color/Spectral Type: M7V (Red dwarf)	Proper Motion: ~43.2 mas/yr

[View Night Sky](#)

The user, after selecting a particular exoplanet can get details(like what is its distance from Earth, what is its planetary orbit, radial velocity and semi major axis). Also, they can view key details about the host star of the exoplanet.

A hypothetical view of the night sky from Kepler 186f



The displayed image shows you the probable night sky appearance from Kepler 186f. Due to the far-away location, the stars we see on Earth will appear much dimmer in the planet. Besides, the unique location can alter the position of constellations. For the appearance of different cosmic objects, it will depend on several factors like: Lyra constellation is expected to be allocated 5 light years away to the east with 1-2 hr lower RA and a slight north/south degree to the DEC. Cepheus constellation is expected to be 4.5 light years away to the north and east with 1-2 hr RA and +50 to +70 degree DEC. Pegasus constellation being 4 light years away to the southeast direction with around 1-2 hr RA and a few degrees southward in DEC, etc.

Hold on! There are actually many stellar objects you can see from this exoplanet and also from your home Earth! So, now it is time to compare perspective of Earth sky with it and later on you can view in detail about some constellations which make up the night sky of Earth as well as our Exosky!

[Go to Star Maps](#)

After clicking on “View Night Sky” button from previous page, they can get a hypothetical imagery of the night sky of that particular exoplanet. They can even know about the location of different constellations and how that sky is made up. For displaying this visualization, informations in the light of stellar research and catalogs of NASA and other space organizations.

What are Star Maps?

Star Maps are mainly graphical representations of celestial stars and constellations visible in the night sky, specifically at an exact moment in time. The interactive 3D star map beside shall help you locate different celestial objects in the night sky. Have a great



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From “view star maps” button of the previously described page, one can get to the page of 3D sky map interactivity , where the user can compare the night sky from the Exoplanet’s night sky(as understood from previous section) with Earth’s night sky. We have utilized this interactive feature with the help of Stellarium Web which reflects different data from NASA and ESA and additionally added informations to ensure that the user understands what a star/sky map is and what to understand with that visualization.

Know more about Star Maps from NASA

A marvelous mission of NASA in depicting star maps and its output

The animation below demonstrates the use of the maps in a tour of the sky. The tour started at W-shaped Cassiopeia, then headed south through Perseus to the winter constellation of Orion the Hunter and the Hyades and Pleiades star clusters in Taurus. It moves southeast past Orion's canine companion and its star, Sirius, brightest in the sky, eventually pausing at the rich southern hemisphere portion of the Milky Way in Carina and Crux, the Southern Cross. The number of stars used to draw the star maps is large enough to reveal many globular and open star clusters as well as the Large and Small Magellanic Clouds. After it passed near the celestial south pole, the tour moves north along the Milky Way to the center of our galaxy near the teapot in Sagittarius. The tour veers northwest from there, finally stopping at the familiar Big Dipper or Plough asterism in Ursa Major.



What is in the figure?

The illustrated image mainly

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The user can know more about star maps and get visualization over star maps in the light of NASA's extensive data from its Scientific Visualization Studio(SVS)

Discover Constellations

So far 88 constellations has been discovered. Among those, there are some very interesting ones which you don't want to miss exploring about! Get a gist of those from this section and for further study click on the star guide to get both beginner and advanced Learning tours!



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Cygnus

Cygnus is a northern constellation on the plane of the Milky Way, deriving its ...

[Read more](#)

[Beginner's Guide](#)

[Advanced Learner's Guide](#)

With the obtained knowledge by comparing Earth's night sky with the Exoplanet's night sky, the users can trace/discover different common constellations. They can either read more or read less about the information as per their choice. Also, they can get options for advanced and beginner's guide over knowing different stars of the constellations.



What is it?

Deneb, also known as Alpha Cygni is a first-magnitude blue supergiant star(brightest star) in the constellation of Cygnus. It is the brightest star in Cygnus and the 19th brightest star in the night sky, with an average apparent magnitude of +1.25. The distance of Deneb has been measured using a number of different methods which produced different values. Hipparcos satellite measurements of Deneb's parallax in the early 1990s yielded a value of 1.01 ± 0.57 milliarcseconds, which was consistent with the distance of about 2,615 light-years or 802 parsecs.

Image taken from <https://apod.nasa.gov/>

Unique characteristics:



Image taken from Stellarium

More characteristics:

- Deneb will be the North Pole star (the nearest visible star to the north celestial pole) around the year 9800 AD. It will only come within 7° from the pole and it will not mark true north as accurately as Polaris does.
- Deneb is the only star in Cygnus included on the list of the 58 navigational stars. The stars selected for use in celestial navigation are some of the brightest and most recognizable stars in the sky. Vega and Altair, the other two stars of the Summer Triangle, are also members of this special group.
- It's about 196,000 times more luminous than our sun. Besides, it contains about 20 solar masses and has a diameter about 203 times that of the sun.
- Deneb spent much of its early life as an O-type main-sequence star of about $23 M_{\odot}$, but it has now exhausted the hydrogen in its core and expanded to become a supergiant.

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By clicking on “Beginner’s guide”, the user can get basic details about the major stars of the constellation, for example their uniqueness in brightness, magnitude, chemical/physical properties and so on.



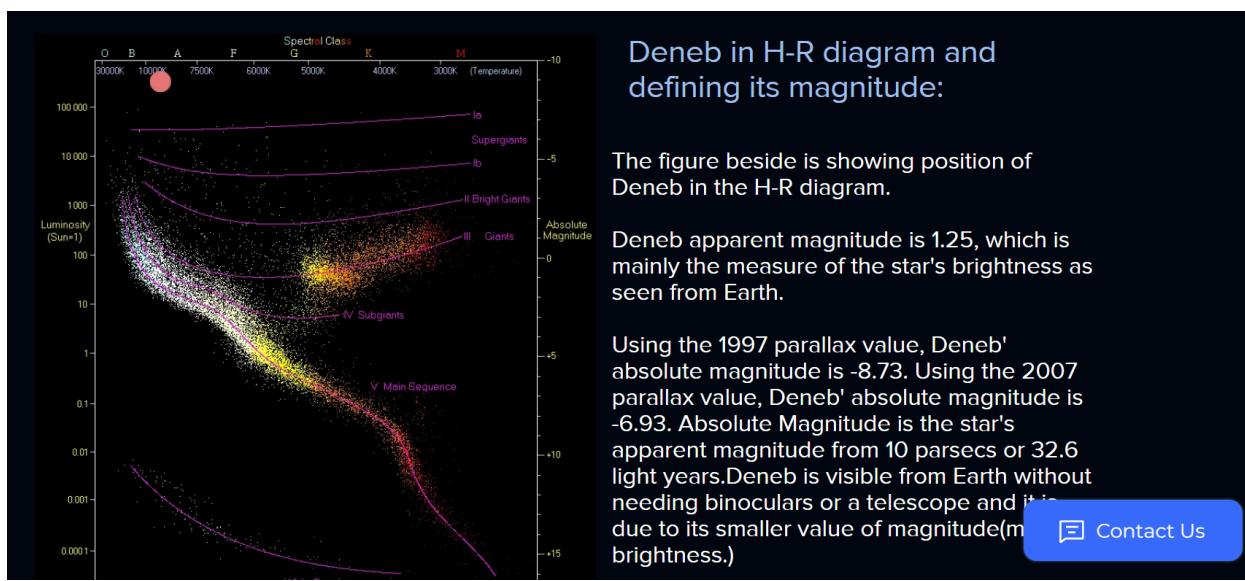
What are the constituents of this beautiful star?

Spectral Type:
Deneb is a blue-white supergiant star with a spectral class of A2Ia. It is the 19th brightest star in the sky shining at +1.25 magnitude.

Luminosity :
Deneb's absolute magnitude is estimated as -8.4, placing it among the visually brightest stars known, with an estimated luminosity of nearly 200,000 L_{\odot} . This is towards the upper end of values published over the past few decades. By the distance from Hipparcos parallax, Deneb has a luminosity of 55,000 L_{\odot} .

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Mass:
Deneb contains about 20 solar masses, and in many cases, its distance is uncertain to be determined with total accuracy. Deneb has a diameter about 203 times that of the sun. And that



Similarly, the user can get to know about specific measurements and alignments as well as characteristics in different grids,charts and diagrams when he/she choose to take an advanced learner’s guide about the particular star of the constellation.

Draw Your Constellation

Use your imagination and draw your constellation...!



2

Undo

Redo

Clear

Finish drawing Constellation



7

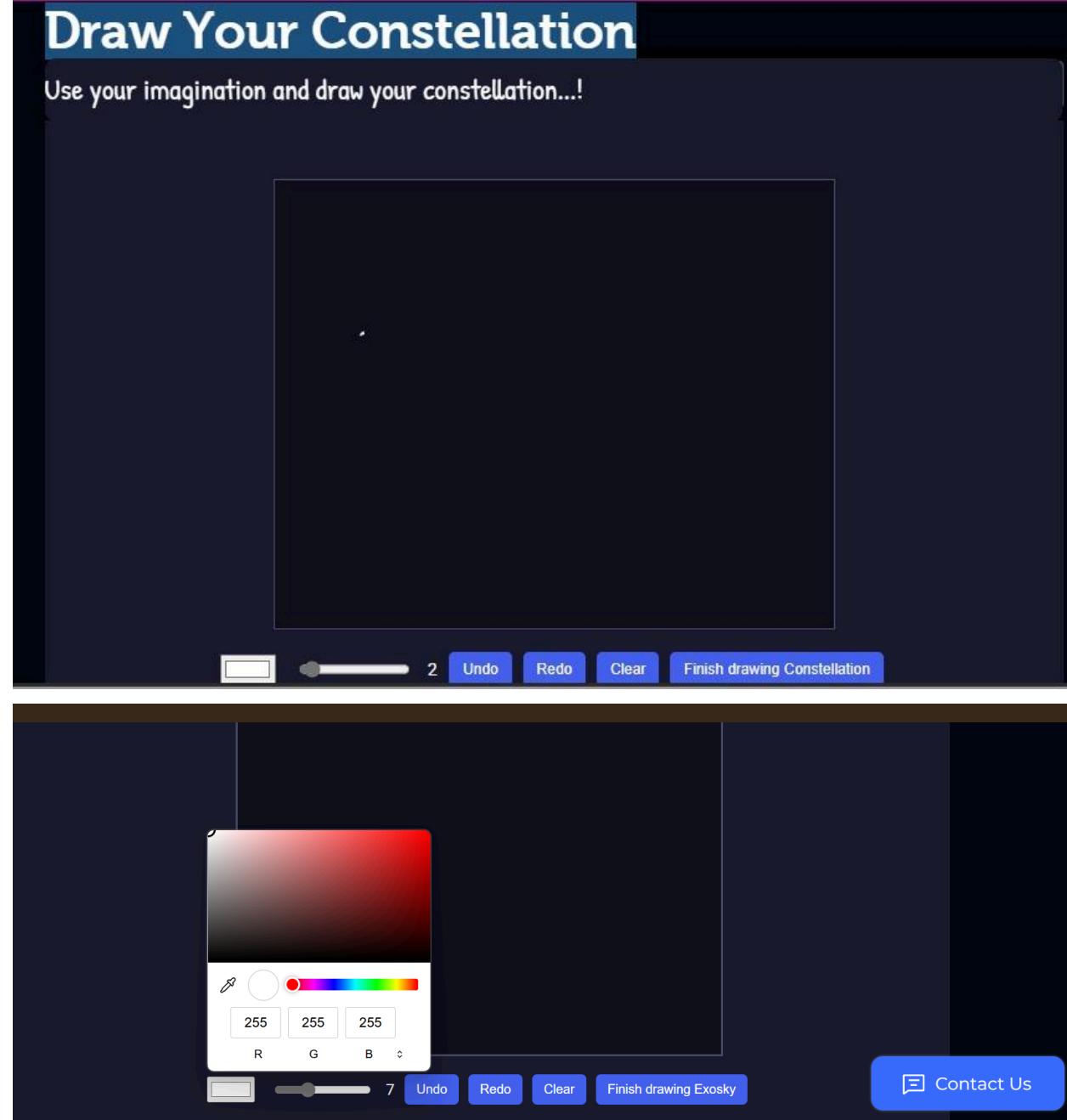
Undo

Redo

Clear

Finish drawing Exosky

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Either clicking on “Draw Constellations” from menu of top-right corner of the homepage or “Dream with Constellation” button from the homepage, the user can draw and create their own constellations and also “exosky”(sky from any celestial body outside of solar

system). After that, they can name constellations and additionally give characteristics to their very personalized universe.



They can get to know about different exoplanets discovered by NASA. We have used different data of NASA, particularly NASA Exoplanet Catalog and NASA Exoplanet Archive for displaying informations and image for all-in-all easy visualization and comprehension over the exoplanets.