

LOST IN SPACE

NASA app guides you through the galaxy.

At the beginning of the month, NASA's Juno spacecraft entered orbit around Jupiter. It promises to dramatically increase mankind's knowledge of our largest neighbor in the solar system. Last July, the space agency's New Horizons mission explored Pluto, our smallest planetary neighbor.

People have been gazing up at the stars, especially on summer nights, for as long as we've walked this earth.



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The twinkling lights in the vast darkness above us have been a source of wonder and mystery for ages. Fantastic stories have been concocted to explain them. Centuries ago, people with vivid imaginations created constellations of mythical creatures and beings in the random arrangements of distant planets and suns.

Science has slowly been peeling away the mystery — if not the wonder — of the stars. From the first telescope more than 400 years ago, to the first satellites and human forays into space in the latter half of the last century, to the continually manned International Space Station and

long-range unmanned probes of today, humans have been unlocking the history and structure of the universe bit by bit.

Two of the major players in this exploration, NASA and the Jet Propulsion Laboratory, have teamed up on many extraterrestrial projects. They've also teamed up on an Earth-bound app, **NASA's Eyes**, that can bring the universe to your computer screen.

The app is divided into three main sections:

Eyes on the Earth

This section showcases various satellite views of our planet, and focuses on things such as temperature, wind speeds, carbon dioxide levels, elevation, moisture content and more. You can select the satellite view you want, which will change the coloration of the scene, and you can view information about each satellite.

A full-screen view of Earth is displayed when you launch the section. Events, such as wildfires or storm systems are highlighted on the planet's surface. The orbits of the featured satellites are traced as they race around the rotating globe. A slider at the bottom of the screen lets you adjust the speed of the rotation from real time to as fast as one hour per second. You can also make adjustments to the image, such as overlaying city

names, adding a relief effect or even putting it into 3D mode to view with those special glasses you get at the movies.

Eyes on the Solar System

This section looks at the sun, planets and moons of our solar system and the numerous spacecrafts that have explored it, or are currently exploring it. The section opens with what I would call an overhead view of the solar system (even though there's really no up or down in space). You can see the paths of all of the planetary orbits with the sun at the center.

There's a control panel at the bottom that lets you explore. You can alter the speed of the orbits, just like in the Earth section. When you speed them up, the date and time indicator zoom into the future to keep up with the planets, so you can see where specific planets will be on any given date.

One section of the panel allows you to select specific planets, moons, dwarf planets, asteroids, comets or spacecrafts. Making a selection zooms you into the object of your choice and provides all sorts of information on it.

Eyes on Exoplanets

This section uses the latest discoveries to examine planets orbiting other stars, light years away in our gal-

axy. The section opens with an animation that takes you to the section of the Milky Way galaxy where our sun is located.

From there, you can explore on your own or let the program take you to preselected destinations. As you hover your cursor over the stars, their names pop up. Clicking on a name will zoom you to that star system and allow you to learn more about it.

Each section uses dramatic 3D animation to illustrate the location, movement and structure of the various objects featured. You can spin the heavenly bodies and spacecraft to view them from any angle. You can zoom in to see the surface details of a planet or the instruments on a spacecraft, or zoom out to see its position in orbit or in the galaxy.

The science and the graphics of this app are amazing. To build a virtual galaxy containing so many stars and planets, and keeping them in the correct orientation with each other as the user flies through space, is quite a feat. My one minor criticism of the app, ironically, deals with its navigation. I couldn't find an easy way to switch between the three sections without restarting.

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