

Software Review

Starry Night Pro 5 Software, developed by Imaginova Canada Ltd, Toronto, Ont., Canada.

Starry Night Pro by Imaginova Software is one of several powerful desktop planetarium programs available for personal computers. These programs allow users to simulate the appearance of the night sky from any location on the surface of the Earth and over a wide range of times in the past and in the future. Users such as amateur and professional astronomers, teachers and students of astronomy can, with great ease, plan observations or simulate celestial events that are not possible to observe first hand. In addition, many of these programs allow direct control of the pointing of popular brands of small telescopes, thus allowing remote control observing of various levels of sophistication. Starry Night Pro 5 does all this and more.

As a professional astronomer who actively collaborates with amateur astronomers, my review of the software will of course be biased by my needs and perspective. I frequently use a competing product, “The Sky” by Software Bisque for controlling a telescope and planning observations for a NASA Ames project called transitsearch, a collaboration with amateur astronomers to detect transit (eclipses) of a certain class of planets around distant stars. In another capacity as adjunct Professor at San Jose State University, I use the same software (and the bundled “Student Version” that come with the textbook I have adopted) to illustrate basic concepts in an Astronomy 101 course for non-science majors. Astronomical coordinate system, the basic motions of the Celestial Sphere, (the apparent distribution of heavenly objects on an imaginary sphere surrounding the earth), the paths of the Sun and Moon and planets through the zodiac, and the retrograde motion of the planets (due to the differing speeds of planets in their orbits about the Sun) are easily illustrated. The untangling of the motions of these celestial wanderers was a major driving force in the development of the modern science of astronomy. The modern Copernican view of our solar system, with the Sun and not the Earth at its center, was supported by a lifetime of meticulous observations made by the great Danish astronomer Ty-

cho Brahe. With software such as Starry Night, students can simulate these observations in a few minutes time!

With this background, I eagerly agreed to review Starry Night Pro 5, a program many of my amateur astronomer colleagues seem to prefer because of the realistic graphical representations of the Night Sky it features. I sat down with my speedy and trusty laptop and the Starry Night Pro instructions and installations CDs. After more than an hour of following prompts, install disk switching and installing upgraded versions of Quicktime, Acrobat Reader, creating a user profile and registering online, I was finally done. 1.56 gigabytes of hard disk space was used in total. Fortunately, I had internet access or I would not have been able to register and complete the installation. Upon starting the program, my reward for enduring all the installation drudgery was a stunning graphic image of a daytime mountain scene. I began to realize what my amateur astronomer colleagues find so appealing about Starry Night.

As a professional astronomer, I thought I would randomly test the positional accuracy of a few simulated observing situations. One Starry Night Pro 5 capability that The Sky does not have is the ability to view the heavens from locations on the surface of other objects in the solar system, such as planets and moons. I navigated to the surface of Saturn’s largest Moon Titan (using the Viewing Location, Other submenu and selecting Titan from a list of locations) and watched how Saturn moved in the sky. Since it is known that Titan is tidally locked and always presents the same face to Saturn, a point on the Saturn side of Titan should always have Saturn above the horizon while the stars rise and set. The Sun and Stars rose and set while Saturn and its other Moons remain fixed in allocation in the sky as expected. First test passed!

To further test the realism of Starry Night capability to simulate the view from the surface of another planet, I chose the Moon and Mars as potential destinations for NASA’s human space exploration goals. What differences would an astronaut on the surface of the Moon or Mars notice relative to our familiar geocentric motions

of the night sky? Of course there should be differences in the rising and setting rates of celestial objects based on the differing rotation rates of the Earth, Moon and Mars. Moreover, on the Earth, the stars appear to rotate around a point we call the North Celestial Pole which is simply the projection of the Earth's spin axis onto the celestial sphere. Today the closest star to that point is a star we call the "Pole Star" or "Polaris". On the Moon and Mars their spin axes point at different areas of the celestial sphere, these are identified in any Astronomical Almanac. How does Starry night reproduce these motions? Faithfully, I discovered. Starry Night does seem to get it right.

Another capability of Starry Night Pro that makes it unique is the embedding of graphical images of celestial objects such as galaxies and nebula into the virtual representation of the heavens. Over a large field of view planetarium programs represent the stars of the major constellations as points of varying sizes (related to their brightness) connected by lines, much like the planetarium views we are all familiar with from the class trips of our youth. Since old fashioned planetarium projectors have a light emitting device in a fixed location for every star that is visible to the naked eye on the celestial sphere, zooming in (magnifying or changing scale) is not possible. A telescope pointed to the same part of the actual night sky might show the details of a galaxy or nebula invisible to the naked eye. Traditional planetaria cannot do this without additional pro-

jection equipment. Software driven planetaria have no such limitation and Starry Night exploits this potential fully. As you zoom in or magnify the region of the sky where the Andromeda Galaxy is located a realistic representation of the nearest galaxy that resembles our own Milky Way galaxy appears. Neat!

Starry night Pro comes with a hardcopy 173 page Starry Night Companion "Your guide to Understanding the Night Sky" (a useful basic introduction to astronomy) the expected detailed help files and a comprehensive electronic "User's Guide" of 173 pages in PDF format.

Like other planetarium programs, Starry Night Pro has the capability to communicate (control and report position) with popular amateur telescopes. I did not have the opportunity to test this feature.

Overall Starry Night Pro is a capable and fully featured "desktop planetarium" program that combines scientific accuracy with compelling graphic representations of well known celestial objects. Although installation is tedious and consumes much hard disk space it is well worth the effort.

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