

## EXPLORING THE UNIVERSE: Meet Kevin Gill '11G

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# EXPLORING THE UNIVERSE

*When our parents tell us, “you can be anything you want to be,” few of us envision a future in space and even fewer make that dream their reality.*

From the comfort of his lab chair in sunny, southern California, **Kevin Gill '11G** has a view into outer space. As a Science Data Software Engineer at NASA’s Jet Propulsion Laboratory (JPL), he spends his time planning and designing technology in support of environmental science and space exploration, as well as data visualization and planetary imaging. His recent work not only produced the first-ever close views of Saturn, but also contributed to NASA’s team winning an Emmy Award.

Kevin earned his M.S. in Computer Science at Rivier and has been designing software to render the unique images he gathers ever since. He used an algorithm he developed during his program at Rivier to generate hypothetical images portraying Mars as a vibrant planet with oceans, an oxygen-rich atmosphere, and a green biosphere. The images went viral and within a week his work was featured on major media networks—Discovery News, Fox News, Universe Today, and the Huffington Post. His work captured NASA’s attention and paved the way for his career move.

“Rivier taught me many of the algorithms and development practices I still use today at NASA,” says Kevin. “In fact, I can trace the lineage of code currently running on NASA systems directly to my final master’s project at the University.” The systems and tools he develops support a range of scientists specializing in the areas of climate, oceanography, asteroids, planetary science, and others.



*Holding JPL's Emmy Award proves a proud moment for Kevin Gill.*

## CASSINI-HUYGENS MISSION

The Cassini-Huygens Mission, commonly referred to as Cassini, was a collaborative, 20-year project of NASA, The European Space Agency, and the Italian Space Agency to explore Saturn. NASA's Jet Propulsion Laboratory was responsible for the design, development, and assembly of the Cassini orbiter.

The spacecraft, launched in 1997, spent seven years traveling to its destination and 13 years exploring Saturn, and its rings and moons. Studies were also conducted of Jupiter along the path to its true destination. Cassini executed an extended series of flybys of Saturn's moons and then ejected the Huygens probe onto Saturn's largest moon, Titan, which exceeds both Mercury and Pluto in size. (Saturn has 53 confirmed moons and 9 others identified, but yet to be confirmed.)

The Huygens probe gathered scientific information on Titan's atmosphere and surface composition. "Cassini made the first observations of a complete seasonal period for Saturn and its moons, flew between the rings and descended into the planet's atmosphere," according to NASA. Key mission discoveries "included the global ocean with indications of hydrothermal activity within Enceladus, and liquid methane seas on Titan."

### The Grand Finale

"During the Grand Finale phase of the Cassini Mission, I was chosen to process imagery coming down from the spacecraft," says Kevin. "For the mission's final year in orbit about Saturn, I was processing imagery for public and scientific consumption. This includes the closest-ever color views of the rings, the final views of Titan and Enceladus, close views of Saturn's upper atmosphere, and Saturn's southern aurora." Similar to Earth's Northern and Southern Lights, Saturn displays spectacular light shows at its northern and southern poles.

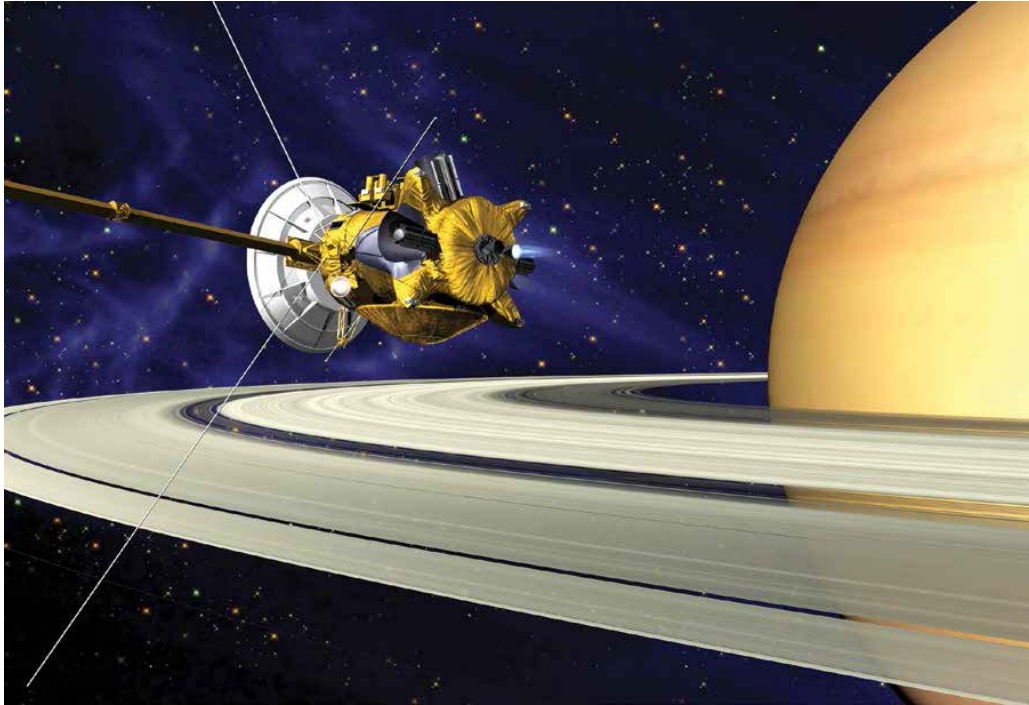
"During Cassini's final plunge into Saturn on September 15, 2017, I was processing the spacecraft's final images, which were then immediately published to the media," shares Kevin. "These images included the final pass by Titan, a view of Enceladus setting behind Saturn, and Cassini's expected impact location on Saturn."

### Stunning Imagery and Powerful Science

JPL's imagery, web, and mass media coverage of Cassini's Grand Finale produced an Emmy nomination for Outstanding Original Interactive Program from the Academy of Television Arts & Sciences. Kevin and NASA Jet Propulsion Laboratory's Media Relations and Public Engagement team produced news, website content, educational resources, television footage, live-streamed video, and social media efforts to document and share Cassini's mission, findings, and final descent into Saturn.

Kevin's compelling, never-seen-before images highlighted Cassini-Huygens' scientific and engineering achievements in the months-long, multimedia campaign.

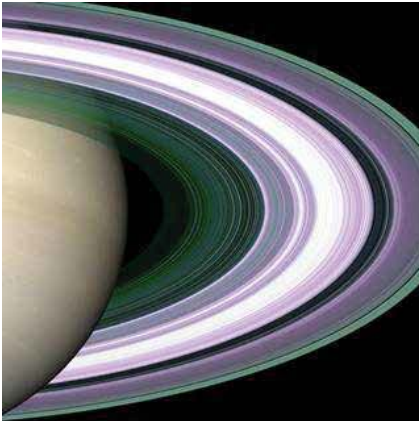
At the Creative Arts Emmy Awards on September 8, 2018, Kevin's and the JPL team's exceptional work on Cassini's Grand Finale earned them the Emmy Award for Outstanding Original Interactive Program.



## 10 WAYS CASSINI MATTERED

1. Cassini-Huygens was a mission of firsts. First to orbit Saturn. First landing in the outer solar system. First to sample an extraterrestrial ocean.
2. Cassini expanded our understanding of the kinds of worlds where life might exist.
3. Cassini-Huygens revealed Titan to be one of the most Earth-like worlds we've encountered and shed light on the history of our home planet.
4. Cassini was, in a sense, a time machine. It revealed the processes that likely shaped the development of our solar system.
5. Cassini's long mission enabled us to observe weather and seasonal changes on another planet.
6. Cassini revealed Saturn's moons to be unique worlds with their own stories to tell.
7. Cassini showed us the complexity of Saturn's rings and the dramatic processes operating within them.
8. What Cassini found at Saturn prompted scientists to rethink their understanding of the solar system.
9. Cassini represented a staggering achievement of human and technical complexity, finding innovative ways to use the spacecraft.
10. Cassini revealed the beauty of Saturn, its rings and moons, inspiring our sense of wonder.

*From NASA Science Website*



### **To Boldly Go**

For many, Kevin is the ultimate guide for our armchair forays into space. Supporting and sharing scientific discoveries expands the body of knowledge on life within our universe.

“I feel that in my job at NASA I am providing a real benefit to society with the tools and applications I am helping to create,” says Kevin. “I enjoy the creative process and seeing the science requirements become actual tools. I enjoy the challenge of designing and developing new technologies to aid in analysis and discovery.” ■

*Note: Select article content and photos are courtesy of NASA. Information can be found at <https://www.jpl.nasa.gov/missions/cassini-huygens> and <https://solarsystem.nasa.gov/missions/cassini/overview>.*