Help Wanted: Galaxy Classifiers - No Experience Needed
Posted by Guy Pirro on 7/25/2007 5:15 PM

The Galaxy Zoo project gives armchair astronomers access to stunning images of the cosmos, many of which have never been seen before. You too can volunteer to classify galaxies and in the process see stunning images from the the Sloan Digital Sky Survey (SDSS), many of which have never been seen before. Here is an image of Galaxy A0741+29.(Image Credit: SDSS)

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On July 11, 2007, a group of researchers and faculty from Johns Hopkins, the University of Oxford, and the University of Portsmouth went live with its Galaxy Zoo project, a Web site that gives armchair astronomers access to stunning images of the cosmos, most of which have never been seen before. In essence, the scientists sought to enlist an army of volunteers from around the world to help complete a massive galaxy census.

To date, the site has recorded nearly 56.5 million hits, attracted 75,000 registered users, been the featured site on Wikipedia.org and even inspired a blog and a poem.

No telescope needed for this astronomical endeavor -- Galaxy Zoo requires just a computer and an Internet connection. After a short tutorial and required test, participants are shown a random galaxy image, courtesy of the Sloan Digital Sky Survey telescope in New Mexico. The volunteers are then asked to identify the image as a spiral galaxy (clockwise, counterclockwise or edge-on), elliptical galaxy, a merger of galaxies or a star. Users can classify as many galaxies as they like. One unidentified volunteer has classified more than 10,000 images.

More than 8 million classifications have been submitted so far for the 900,000-plus galaxies in the Galaxy Zoo, which is just a small slice of the Sloan data set.

Though the process is not a perfect science, the more volunteers the astronomers get, the more accurate the results, said Johns Hopkins' Alexander Szalay, Centennial Professor of Astronomy in the Henry A. Rowland Department of Physics and Astronomy and an architect of the Sloan database.

"We hoped that for every galaxy we'd receive a large number of identical classifications so that we could, with high confidence, determine its shape," said Szalay, who noted that the human brain is actually better than a computer at pattern recognition.

Astronomers hope the project's results will help them better understand the structure of the universe and how galaxies form and evolve. Does one galaxy type evolve into another? In theoretical simulations, astronomers have found that the merger of spirals can create an elliptical, and that an elliptical can become a spiral by accretion of further stars and gas during its lifetime.

The information gathered could also be used to help develop galaxy classification software that can be applied to much larger datasets.

"I think scientists will find our results very useful, and the data can be used for a number of science projects," said Szalay, a professor of computer science.

The Galaxy Zoo team has been overwhelmed by the response, he said, as have the JHU-hosted computer servers.

"This has far exceeded our expectations," he said. "In a way, we didn't know what to expect. You take the time to build a site like this, but you're thinking it could be a total flop and nobody will come. Yet, on the first day, we had 1 million hits. Amazing."

A few hits too many, actually, as the Web site's servers slightly buckled under the strain, causing some initial delays in response and computer timeouts. The crushing site traffic even blew a circuit in the data center, according to Jan Vandenberg, computer systems administrator in the Physics and Astronomy Department.

"We've had a lot of big site rollouts and faced some serious traffic before, but this was the biggest yet," Vandenberg said. "Nobody imagined that something so seemingly mundane as classifying galaxies would become such a fan pastime."

According to some Galaxy Zoo bloggers, the classification process is downright addictive and you can't stop at one. As a reminder of their visit, participants are able to print out posters of the galaxies they have explored.

The project's concept originated with Kevin Schawinski, an astrophysicist at Oxford University, and Chris Lintott, a postdoctoral researcher at Oxford and the co-host of the popular BBC show The Sky at Night. The pair quickly won the support of Sir Patrick Moore, the famous British astronomer and longtime host of The Sky at Night, and Brian May, the lead

guitarist of the rock band Queen and the co-author, with Lintott and Moore, of the book Bang! The Complete History of the Universe. May, who recently completed his thesis for a PhD in astronomy, brought in a graphic designer who created the project's site.

Schawinski himself had classified thousands of galaxies taken from SDDS, a massive project to survey and map one-quarter of the entire sky in detail, but quickly realized it was too big a job for one man. So, he decided to spread the fun around.

For more information:

http://www.galaxyzoo.org/

http://www.jhu.edu/~gazette/2007/23jul07/23galaxy.html