

Amateur astronomers needed: Help classify stars with Gaia's data

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Gaia mapping the stars of the Milky Way. Credit: ESA/ATG medialab; background: ESO/S. Brunier

ESA's Gaia mission has been collecting data on millions of space objects like stars and asteroids to build an extensive cosmic record. Now, to take

it up a notch, it needs your eyes.

Gaia's [data](#) is already an invaluable resource for astronomers and scientists. The mission was launched in late 2013 and now lies some 1.5 million km from Earth. With its two powerful telescopes and three [science instruments](#), Gaia is creating the largest and most precise 3D map of the Milky Way. It does so by determining the position of its target stars and registering how they change throughout time.

So far, Gaia has measured 1.8 billion stars with unprecedented precision, the [richest star catalog to date](#). Gaia's [third major data release](#), published in 2022, includes 10.5 million variable sources over the entire sky, identified using machine learning methods in a supervised classification scheme.

We have learned a great deal about the Milky Way as a whole too. Thanks to the mission, we now know our galaxy merged with another galaxy in its early life, around 10 billion years ago. We have also learned more about our neighbor galaxy, Andromeda, and how it will collide with the Milky Way billions of years from now.

Though Gaia's telescopes are incredibly powerful, researchers within the mission still need the help of the oldest visual tool on the planet: your eyes. In its almost 10 years since launch, Gaia has contributed massively to our understanding of the cosmos, and now you can take part in furthering the discoveries.

Within [Gaia Vari](#), a citizen science project, you can help classify Gaia's variable stars—stars that change in brightness over time. These observations are key to better understand these celestial bodies better.

As analyzing individual sources is beyond the scope of the Gaia consortium, you, as a citizen scientist will look over images and graphs

to classify stars' brightness changes, colors, and other variables over time. You may also identify incorrect classifications made by the automated algorithms. This will help scientists organize and categorize what we know of the millions of stars Gaia has observed, toward the next Gaia data release in 2025. You may actually discover the most interesting stars!

Do you wish to take part in a citizen science project?

If the scientist in you wants to help, [ESA has got you covered](#). From monitoring [light pollution](#) to classifying images of Mars, you can help us advance peaceful space exploration. We also hope that by opening up ESA data and tools to the public, we are improving the openness of our work, increasing citizen engagement in [scientific research](#), and building stronger connections between science and society.

To participate in the Gaia Vari project, go to [Zooniverse](#), a platform with projects where people power the research. There's no need for you to sign in or create an account. After entering the platform, you can learn how to look at the graphs and data and classify each variable.

"Gaia is deepening our understanding of the universe as we know it, and both professional and [amateur astronomers](#) have been amazed with the results analyzed so far. Now we need help from the wider amateur astronomy community to better understand how [stars](#) change throughout the years," says Pedro García Lario, Community Support Scientist at Gaia Science Operations Center.

Provided by European Space Agency

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