This project aims to create a new, intelligent vision system for the Major Atmospheric Gamma Imaging Cherenkov (MAGIC) telescopes in Spain. These telescopes are important tools for observing very-high-energy (VHE) gamma-rays, the radiation emitted from some of the most energetic phenomena in the universe. But we want to make them even better.

It costs quite a bit to keep these telescopes running - around 200 thousand euros each year for travel and stays of operators at the telescope site. We're planning to build a vision system that will help us to operate the telescopes remotely. This means we can keep them working and studying the energetic sky without needing a team of people always to be there.

What is a vision system? It is like giving the telescopes a pair of smart eyes. These eyes will use a combination of cameras and intelligent software to monitor the surroundings of the telescopes. They will be able to spot potential problems, like objects that might obstruct the telescopes or damage their mirrors. By keeping an eye out for these issues, the vision system will ensure the telescopes can work safely.

Creating this vision system is challenging. We will select the right cameras for lighting conditions. Then we will write a code to teach a computer how to understand what the cameras are seeing and spot potential problems. This is achieved using deep learning techniques, where a computer model is trained to recognize image patterns. We will work closely with experts at MAGIC telescopes to install the system and test it under various conditions.

Once this vision system is up and running, it will make a major difference in how we operate the MAGIC telescopes. It is expected to make them safer and more efficient, providing the same scientific results at a limited cost. This system will also help to pave the way for future developments in very-high-energy astronomy, in particular for the upcoming Cherenkov Telescope Array Observatory.

In summary, we're giving telescopes a set of smart eyes, allowing them to watch over themselves and their surroundings. This is not just about saving money; it's about creating a safer, more efficient way to study the universe. With a vision system like this, we will keep unveiling the mysteries of the Universe.