Cameras in 3D-Modelling

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How cameras are used

Cameras play an important role in any robotic system.They are used to alert the robot of its surroundings so that it doesn't crash into objects around it. Robots are mounted with a 3D Camera that is connected to a computer vision software to detect and track objects. Computer vision is a field of artificial intelligence that process visual data and extract useful information from it. Even though the robot might seem to be using complex commands that is not the case. What the system is actually doing is that it takes the images taken by the camera in the form of pixels and proccess them until it breaks down the image into simple geometric structures (rectangle,square,triangle,etc). So we can learn 2 things from this:

1-The better the camera you use the better the more pixels we will be recieving hence more data to work with.

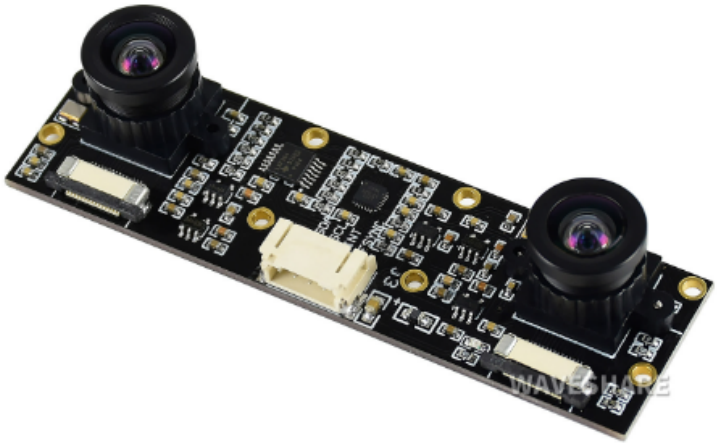
2-Since the system isn't actually using the image as a whole, we don't have to use a typical camera to get the data we need. So we can use different types of cameras in our system each with its own features that we can choose from depending on the project we're working on. Let's see what each of those camera types can do so we know what to use for our next project.

Mono Camera

Mono camera (aka monochrome camera) are exactly what the name suggests. They're able to capture a light wave in a single spectrum unlike our typical camera which is able to capture light from all areas of the spectrum. The monochrome camera is only able to capture light in 2 colours -white and black-. What sets this camera apart is its sensitivity to light. The monochrome camera is extremely sensitive to light which allows us to capture low light images very clearly.

Stereo Camera

Stereo cameras are a very special kind of camera that have 2 or more lenses with an image sensor on each lens. It works in the same way human eyes do, a process called binocular vison, that gives it the ability to capture images in 3D,this process is called stereo photography. These cameras give our robot a better visual range, which can be useful is our robot is moving around in tight or crowded areas.



RGBD camera

An RGBD camera is actually considered a type of sensor. It is exactly the kind of camera that is used in the X-box 360 kinect console. This camera gives depth and colour to the image it takes using sensors. RGB stands for red,green,blue which are the primary colours that when added together give us all the colours that we recieve.