How can machines see images? How can we program them if we neither know how to explain how do we do it in our own words? We can’t. This is why, to solve these problems, we are using Machine Learning, by giving to a machine some examples of what to do. For example, if we want an AI that can see the differences between a cat and a dog, we just give a PC lot of pictures of cats and dogs so it can tell the differences. This is possible by using statistics. Machine Learning uses statistical algorithms to learn from example. These examples are called data and we say that a computer learns from data.  
These algorithms are extremely simple, but can handle a lot of data, and they work well if they have enough examples.

The most popular method is called deep neural network, also called deep learning. They were invented during the 1940s. But why they “reborn” today? Because there are more and more data and we have enough power to handle all that data.

Machine Learning is about creating statistical programs called models.   
A Model takes input and gives back an output. (Input: picture; output: cat/dog/bunny)  
Models are created based on lots of example data  
Example data is made up of input and what should return as output (An example data of an image of a cat contains the picture and the expected output)  
A model takes these examples and uses it to train itself.

After this procedure, if you give a picture to the AI without the expected output, you will get an output that describes the picture.

Machine Learning can be applied in lots of field (Images, music, videos, DNAs, viruses, space data, ...) and the base of an algorithm is the same.

The common machine learning algorithm works with classification (giving an output like cat, dog or rabbit) so it puts outputs in classes.  
There are other possible outputs:

1. If the output is a number, like a percentage, we call it Regression
2. If the output is a new example, a new image/music, we call it Generative Model
3. When the model is trained on examples of input and output, it’s called Supervised Learning.
4. If we don’t know the expected output (we have a lot of DNA sequences and we want to find the different types of DNAs) this is called Unsupervised Learning.
5. The last one is reinforcement learning which based on the output, the model receives a good feedback if the output is what we were expecting or a bad feedback in case the output is wrong, like training a dog. This is the best for winning video games