

A Beginner's Guide to Object Identification Technology

What is Object Identification?



Object identification technology is an AI-based tool that helps to detect or analyze objects and identify them from a digital photo or video. Thanks to the advancement in the field of artificial intelligence, object identification can be used in image search.

Adding Human Intelligence to a Computer

When an image is viewed, it takes the human brain a fraction of a second to identify the nature of the photo, the environment, or the person.

Computers are quick, accurate, and precise but they lack the ability of the human brain. Several advancements were made to replicate this human intelligence into computers using AI.

During the Covid 19 pandemic, robots were used to reach patients in isolation. Robots assisted patients in accessing food and medical supplies without the risk of person-to-person contact. This was achieved by powering computers with AI.

How can Object Recognition Software Help Businesses?

Object Identification software can help businesses in protecting data, provide security to the office, ensure quality control, and save time in packaging and transportation.

Counting made simple



AI-enabled software can count anything, whether static or moving. It can be used on highways to count the vehicles that pass-through checkpoints, the number of pedestrians going through security, or to count the number of boxes packed inside the truck. All it requires is a source file or an input from a digital camera to get an input.

Object Identification

With the help of feature detection, you can identify any type of object by decoding the features of the object. Four basic techniques are used for this:

Image recognition:

This is the primary stage of the process. If a vehicle on the road is to be identified, the image recognition system first analyses the car's core features. It then compares it with thousands of images stored in the database to identify the car's make and model.

Object localization:

This technology helps to identify the exact place of each object in the image. For example, if an image includes the pictures of a dog and a cat, it creates a bounding box around each animal and includes a class prediction.

Object detection:

This is similar to object recognition and is primarily used to identify and classify the number of times a particular object occurs in an image.

Image segmentation:

This uses pixel data to locate objects in an image. It highlights the location to ascertain the object's presence instead of creating a boundary to the object. If the image is of a car, the system colours the entire car red with a class prediction of "car" along with a confidence score.

Motion-Based Multiple Object Tracking

Motion-Based Multiple Object Tracking helps detect moving objects. Essentially, videos are sequences of images. Object Tracking is done by locating spatial and temporal changes during a video sequence including its position, size, and shape.



It is used for video compression, video surveillance, vision-based control, medical imaging, augmented reality, and robotics. It also provides input to higher-level vision tasks such as 3D mapping, content-based indexing, and retrieval.

Solving Business Challenges using Object Recognition

Object Recognition software can be used to solve business challenges across different verticals. Here are some real-life scenarios where Object Recognition can assist businesses.

Security and surveillance:

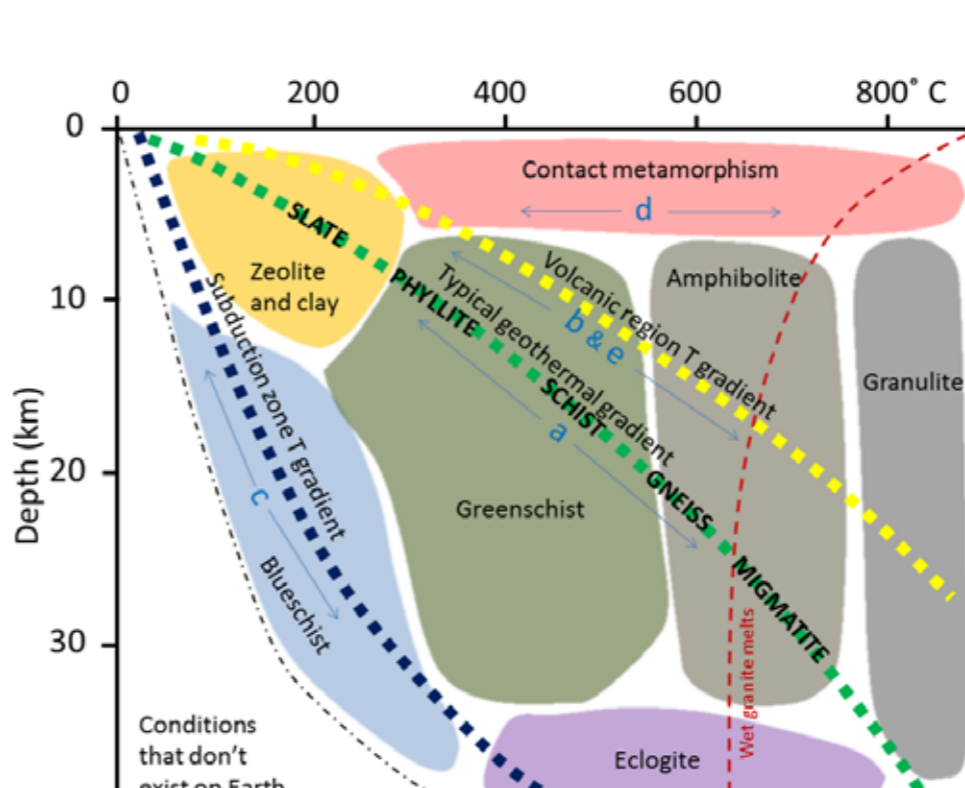


AI-based CCTV cameras are used in offices, residential complexes, and public places that can deliver advanced analytical functions.

An AI-based CCTV camera can help with vehicle detection, facial recognition, person detection, counting the number of people and vehicular traffic, and licence plate recognition.

Satellite and Earth-Imaging:

It helps to understand objects in the atmosphere and measure atmospheric pressure to predict weather forecasts. It can predict tectonic changes due to any metamorphosis. It can also help air traffic control towers to have continuous communication with the pilots.



Self-Driven Automobiles:



Self-driven cars use advanced object recognition techniques that ensure a safe and smooth driverless experience. It uses sensors to detect the relative distance of objects surrounding the vehicle and identify roadblocks and collisions

Healthcare:

The potential for Object Recognition in healthcare is quite vast, starting from patient care, administration processes, and minimally invasive surgeries. Surgical robots are used for precise and minimally invasive surgeries and stitching minor wounds. It also helps in the diagnosis and treatment of many diseases.

