**16+ OpenCV Projects, Ideas & Topics for Beginners with Source Code [2024]**

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In this article, I will present easy and exciting **project ideas using OpenCV** for both beginners and those with some experience.

You’ll find engaging projects that are practical and not too challenging to implement.

Plus, I already put link where you can download the complete source code of these OpenCV project ideas absolutely free.



**What is OpenCV?**

**OpenCV** is short for Open Source Computer Vision. Intuitively by the name, it is an open-source Computer Vision and Machine Learning library.

This library is capable of processing real-time image and video while also boasting analytical capabilities. It supports the Deep Learning frameworks.

By the way if you are new to python programming and you don’t know what would be the the Python IDE to use, I have here a list of [**Best Python IDE for Windows, Linux, Mac OS**](https://itsourcecode.com/blogs/best-python-ide-for-windows-2021/) that will suit for you.

I also have here [**How to Download and Install Latest Version of Python on Windows**](https://itsourcecode.com/blogs/how-to-download-and-install-latest-version-of-python-on-windows-2021/)**.**

**OpenCV Project Ideas and Topics for Beginners with Source Code**

**1. Motion Detection OpenCV Python With Source Code**

The Motion Detection was developed using Python OpenCV, this Project is used in CCTV Cameras to detect any kind of motion in the video frame.

A Motion Detection OpenCV Python Algorithm Capture Video, in which you have to detect movement using OpenCV in Python.

In many applications based on machine vision, motion detection is used.

For example, when we want to count the people who pass by a certain place.

In all these cases, the first thing we have to do is extract the people that are at the scene.

**You can download the complete source code here:**

**[Motion Detection OpenCV Python With Source Code](https://itsourcecode.com/free-projects/python-projects/motion-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**2. Real-Time Car Detection using OpenCV Python With Source Code**

The **Real-Time Car Detection**was developed using Python OpenCV, Vehicle detection is one of the widely used features by companies and organizations these days.

This technology uses computer vision to detect different types of vehicles in a video or real-time via a camera.

A Car Detection OpenCV Python finds its applications in traffic control, car tracking, creating parking sensors, and many more.

In this, we will learn how to build a car tracking system in Python for both recorded and live cam streamed videos.

**You can download the complete source code here:**

**[Real-Time Car Detection using OpenCV Python With Source Code](https://itsourcecode.com/free-projects/python-projects/real-time-car-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[The Real-Time Car or Vehicle Detection using OpenCV and Python was developed using Python OpenCV, It also includes a…](https://itsourcecode.com/free-projects/python-projects/real-time-car-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

[itsourcecode.com](https://itsourcecode.com/free-projects/python-projects/real-time-car-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

**3. Barcode and QR Code Reader or Scanner with OpenCV in Python**

A **Barcode Reader OpenCV Python** is very cool and interesting because they store information in a different format.

The fun part about them is we can’t really tell what they are storing until we scan them.

It’s like playing a puzzle game. One more thing that I like about them is they can be part of the physical world and still connect us to the internet world.

**You can download the complete source code here:**

**[Barcode and QR Code Reader or Scanner with OpenCV in Python](https://itsourcecode.com/free-projects/python-projects/barcode-and-qr-code-reader-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[The Barcode and QR Code Reader OpenCV Python was developed using Python OpenCV, It also includes a downloadable source…](https://itsourcecode.com/free-projects/python-projects/barcode-and-qr-code-reader-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**4. Object Measuring Size OpenCV Python With Source Code**

The **Object Measuring Size** was developed using **Python OpenCV**, the project provides a script to read an image and based on the dimensions of a reference object find the dimensions of other objects in a scene.

A **Object Measuring** we will learn how to perform object measurement using **OpenCV** and Python.

**You can download the complete source code here:**

**[Object Measuring Size OpenCV Python With Source Code](https://itsourcecode.com/free-projects/python-projects/object-measuring-size-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[The Object Measuring Size OpenCV Python was developed using Python OpenCV, It also includes a downloadable source code…](https://itsourcecode.com/free-projects/python-projects/object-measuring-size-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**5. Real-Time Plate Number Detection using OpenCV in Python**

The **Real-Time Plate Number Detection** was developed using **Python OpenCV**, License Plate Recognition is an image-processing technology used to identify vehicles by their license plates.

This technology is used in various security and traffic applications.

A **Plate Number Detection OpenCV Python** aims to recognize license number plates.

In order to detect license number plates, we will use OpenCV to identify number plates and Python pytesseract to extract characters and digits from the number plates.

**You can download the complete source code here:**

**[Real-Time Plate Number Detection using OpenCV in Python](https://itsourcecode.com/free-projects/python-projects/real-time-plate-number-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[The Real-Time Plate Number Detection using OpenCV was developed in Python OpenCV, It also includes a downloadable…](https://itsourcecode.com/free-projects/python-projects/real-time-plate-number-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**6. Real-Time Drowsiness Detection using OpenCV Python**

The **Real-Time Drowsiness Detection**was developed using **Python OpenCV**, this **Drowsiness Detection** is a safety technology that can prevent accidents that are caused by drivers who fall asleep while driving.

In a **Drowsiness Detection OpenCV Python** project, we will be using OpenCV to gather the images from the webcam and feed them into a **Deep Learning** model which will classify whether the person’s eyes are ‘Open’ or ‘Closed’.

**You can download the complete source code here:**

**[Real-Time Drowsiness Detection using OpenCV Python](https://itsourcecode.com/free-projects/python-projects/real-time-drowsiness-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**7. OpenCV Python East Text Detection With Source Code**

In this **OpenCV** **Text Detection Python,** you will learn how to use **OpenCV’s EAST** detector to automatically detect text in both images and video streams.

Also, you will learn how to use OpenCV to detect text in images using the**EAST text detector**.

**You can download the complete source code here:**

**[OpenCV Python East Text Detection With Source Code](https://itsourcecode.com/free-projects/python-projects/opencv-python-text-detection-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[The Text Detection OpenCV Python was developed using Python OpenCV. It also includes a downloadable project with source…](https://itsourcecode.com/free-projects/python-projects/opencv-python-text-detection-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**8. Human Body Detection OpenCV Python With Source Code**

The **Human Body Detection OpenCV Python** will show how to build your own “smart” video camera.

It will show how to take an image from the frame of a web camera, detect if there is a human in the frame, at the same time the system count if how many people or person detect on the video camera.

A **Human Body Detection Python OpenCV** is an intermediate level deep learning project on computer vision, which will help you to master the concepts and make you an expert in the field of Data Science.

**You can download the complete source code here:**

**[Human Body Detection OpenCV Python With Source Code](https://itsourcecode.com/free-projects/opencv/human-body-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[This 2022 Real-Time Human Body Detection OpenCV Python is an intermediate level deep learning project, it also includes…](https://itsourcecode.com/free-projects/opencv/human-body-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**9. Face Recognition Code In Python Using OpenCV Free Download**

A **Face Recognition Code in Python** can detect faces of people in an images, faces contains a list of coordinates for the rectangular regions where faces were found.

We use these coordinates to draw the rectangles in our image. And also the **Face Detection Using Python Project** can detect also real time faces in a camera on your laptop or pc.

Similarly, the **Face Detection In Python Using Opencv** can detect faces in videos. As you know videos are basically made up of frames, which are still images. So we perform the face detection for each frame in a video.

**You can download the complete source code here:**

**[Face Recognition Code In Python Using OpenCV Free Download](https://itsourcecode.com/free-projects/opencv/face-recognition-code-in-python-using-opencv-free-download/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[Download here the Best Face Recognition Code in Python Using OpenCV With Source Code for free, This is your time to…](https://itsourcecode.com/free-projects/opencv/face-recognition-code-in-python-using-opencv-free-download/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**10. Eye Detection OpenCV Python With Source Code**

The **Real-Time Eye Detection OpenCV Python** was developed using **Python Detection OpenCV**, this Machine Learning **Eye Tracking OpenCV Python**, we’re going to discuss object detection with HaarCascades frontalface.

We’ll do eye detection to start. In order to do object recognition/detection with eye cascade files, you first need cascade files. For the extremely popular tasks, these already exist.

Detecting things like faces, cars, smiles, eyes, and license plates for example are all pretty prevalent.

**You can download the complete source code here:**

**[Eye Detection OpenCV Python With Source Code](https://itsourcecode.com/free-projects/opencv/eye-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**11. Color Detection OpenCV Python With Source Code**

A **Color Detection Python** is necessary to recognize objects, it is also used as a tool in various image editing and drawing apps.

this Python **Color Detection Using OpenCV** is the process of detecting the name of any color.

Simple isn’t it? Well, for humans this is an extremely easy task but for computers, it is not straightforward.

**You can download the complete source code here:**

**[Color Detection OpenCV Python With Source Code](https://itsourcecode.com/free-projects/opencv/color-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**12. Holistic Detection OpenCV Python With Source Code**

The **Holistic Detection**was developed using **Python OpenCV**, you’ll know hoe to do **HOLISTIC DETECTION** with **MediaPipe** and OpenCV in Python.

By this project you will be able to see the results from the pose and holistic that we have detected in real time camera.

This project detect left and right hand, face mesh, and pose detection. **MediaPipe** has a lot of built-in customizable Machine Learning Solutions.

**You can download the complete source code here:**

**[Holistic Detection OpenCV Python With Source Code](https://itsourcecode.com/free-projects/python-projects/holistic-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**13. Real-Time Face Blur OpenCV Python With Source Code**

The **Real-Time Face Blur** was developed using **Python OpenCV**, this **Python OpenCV Project With Source Code** you will learn how to blur and anonymize faces using OpenCV and Python.

A OpenCV Python Face Blur we are going to learn to Realtime videos using OpenCV and try to learn with existing tools like Haar cascades and build Realtime Face Detection and Face blur.

**You can download the complete source code here:**

**[Real-Time Face Blur OpenCV Python With Source Code](https://itsourcecode.com/free-projects/python-projects/real-time-face-blur-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

[The Real-Time Face Blur OpenCV Python was developed using Python OpenCV, It also includes a downloadable Python Project…](https://itsourcecode.com/free-projects/python-projects/real-time-face-blur-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)

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**14. Volume Control With Hand Detection OpenCV Python With Source Code**

The **Volume Control With Hand Detection**was developed using **Python OpenCV.**

In this **Python OpenCV Project With Source Code** we are going to build **a Volume Controller with OpenCV**, to change the volume of a computer.

We first look into hand tracking and then we will use the hand landmarks to find gesture of our hand to change the volume.

This project is module based which means we will be using a previously created hand module which makes the hand tracking very easy.

**You can download the complete source code here:**

**[Volume Control With Hand Detection OpenCV Python With Source Code](https://itsourcecode.com/free-projects/python-projects/volume-control-with-hand-detection-opencv-python-with-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**15. Real-Time Face Mask Detection with OpenCV Python Source Code**

The **Real-Time Face Mask Detection OpenCV Python** was developed using Python Detection OpenCV, during the Pandemic COVID-19, WHO has made wearing masks compulsory to protect against this deadly virus.

A **Face Mask Detection** We will build a real-time system to detect whether the person on the webcam is wearing a mask or not.

We will train the face mask detector model using OpenCV.

This is a nice project for beginners to implement their learnings and gain expertise.

**You can download the complete source code here:**

**[Real-Time Face Mask Detection with OpenCV Python Source Code](https://itsourcecode.com/free-projects/python-projects/real-time-face-mask-detection-opencv-python-source-code/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**16. Student Attendance Management System Project In Python**

The **Student Attendance Management System Project in Python** was developed using Python OpenCV in Real-Time.

This **Attendance Management System Project in Python** provide a valuable attendance service for both teachers and students.

Reduce manual process errors by provide automated and a reliable attendance system uses face recognition technology.

An Attendance Management System Using Face Recognition Python is a simple python script that recognizes faces and mark attendance for the recognized faces in an excel sheet.

**You can download the complete source code here:**

**[Student Attendance Management System Project In Python](https://itsourcecode.com/free-projects/python-projects/real-time-student-attendance-management-system-project-in-python/?source=post_page-----bedfa8165c3b--------------------------------" \t "_blank)**

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**Conclusion**

These **OpenCV projects**, complete with free source code, are specially designed for beginners and those with experience.

They provide a valuable resource to assist you in your learning journey.

By working on these projects, you can gain practical experience with OpenCV.

This practical knowledge will help you understand the platform’s workings better, making future projects less intimidating.

If you found this article valuable, please leave a comment below and share your thoughts about this article.

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