# European IT Certification Curriculum Self-Learning Preparatory Materials

EITC/AI/GVAPI

Google Vision API

This document constitutes European IT Certification curriculum self-learning preparatory material for the EITC/AI/GVAPI Google Vision API programme.

This self-learning preparatory material covers requirements of the corresponding EITC certification programme examination. It is intended to facilitate certification programme's participant learning and preparation towards the EITC/AI/GVAPI Google Vision API programme examination. The knowledge contained within the material is sufficient to pass the corresponding EITC certification examination in regard to relevant curriculum parts. The document specifies the knowledge and skills that participants of the EITC/AI/GVAPI Google Vision API certification programme should have in order to attain the corresponding EITC certificate.
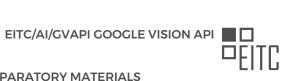
Disclaimer

This document has been automatically generated and published based on the most recent updates of the EITC/AI/GVAPI Google Vision API certification programme curriculum as published on its relevant webpage, accessible at:

https://eitca.org/certification/eitc-ai-gvapi-google-vision-api/

As such, despite every effort to make it complete and corresponding with the current EITC curriculum it may contain inaccuracies and incomplete sections, subject to ongoing updates and corrections directly on the EITC webpage. No warranty is given by EITCI as a publisher in regard to completeness of the information contained within the document and neither shall EITCI be responsible or liable for any errors, omissions, inaccuracies, losses or damages whatsoever arising by virtue of such information or any instructions or advice contained within this publication. Changes in the document may be made by EITCI at its own discretion and at any time without notice, to maintain relevance of the self-learning material with the most current EITC curriculum. The self-learning preparatory material is provided by EITCI free of charge and does not constitute the paid certification service, the costs of which cover examination, certification and verification procedures, as well as related infrastructures.

**EUROPEAN IT CERTIFICATION CURRICULUM SELF-LEARNING PREPARATORY MATERIALS**

## TABLE OF CONTENTS

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: INTRODUCTION**
**TOPIC: INTRODUCTION TO THE GOOGLE CLOUD VISION API**

Cloud Vision API is a powerful tool that provides image analytics capabilities through easy-to-use APIs. It allows application developers to create advanced applications that can analyze and understand the content within images. This service is built on robust computer vision models that power various Google services.

With Cloud Vision API, developers can detect a wide range of entities within an image, including everyday objects, faces, and product logos. The API is designed to be user-friendly and accessible. For instance, imagine a Raspberry Pi robot named Gopi. Gopi can't directly call the Cloud Vision API, but it can send the images captured by its camera to the cloud and receive real-time analysis results.

Facial detection is one of the features provided by Cloud Vision API. It can identify faces in an image and provide the positions of the eyes, nose, and mouth. This information can be used to program the robot to track and follow a person's face. Additionally, the API can detect emotions such as joy, anger, surprise, and sorrow. This allows the robot to respond accordingly, moving towards smiley faces or avoiding individuals displaying anger or surprise.

Another interesting feature of Cloud Vision API is entity detection. This means that it can detect various objects within an image. For example, it can identify objects like glasses, automobiles, or even money. The API empowers developers to take advantage of Google's latest machine learning technologies in a straightforward manner.

To learn more about Cloud Vision API and explore its capabilities, visit cloud.google.com/vision.

EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS
LESSON: INTRODUCTION
TOPIC: INTRODUCTION TO THE GOOGLE CLOUD VISION API IN PYTHON

Artificial Intelligence - Google Vision API - Introduction - Introduction to the Google Cloud Vision API in Python

Artificial Intelligence (AI) has become a fast-growing trend, with various applications in different industries. One of the popular AI technologies is Google's Vision AI API, which allows users to detect objects and images from pictures or videos. Companies like Box.com and New York Times have already embraced this technology, utilizing it in various ways. For instance, Google's photo app uses Vision AI technology to organize photos based on different categories.

The Google Vision AI API consists of two services: AutoML Vision API and Vision API. The AutoML Vision API is designed for automating machine learning models. It enables users to upload images and train custom image models using an easy-to-use graphical interface. With this service, users can build their own vision training models.

On the other hand, the Vision API service is a pre-trained machine learning model that utilizes REST API and PRC API. It allows users to analyze images and obtain various types of information. For example, by uploading an image of a parrot to the Vision API, it can recognize the object as a parrot and provide additional details such as the bird species (African grey parrot) and related labels.

Moreover, the Vision API offers a powerful feature called the web category. By analyzing the uploaded image, the API can detect if the image is available anywhere on the web. It provides web entities related to the image, allowing users to explore search results and related information.

Additionally, the Vision API provides information about the properties of the image, including dominant colors and their respective percentages. This feature can be useful for analyzing color patterns in images. The API also offers a safe search feature, indicating the likelihood of the image meeting certain categories.

To determine which API to use, Google provides a table with questionnaires to help users make an informed decision. If you are a large company looking to build your own training models, the AutoML Vision API service with a graphical UI is recommended. However, if you prefer to utilize the pre-trained model and leverage the data already collected by Google, the Vision API is the suitable choice.

The Google Cloud Vision API provides powerful capabilities for image analysis and object recognition. It offers features such as recognizing objects, providing labels and web entities, analyzing color properties, and determining safe search categories. Whether you want to automate machine learning models or utilize pre-trained models, the Google Vision AI API is a valuable tool for various applications.

The Google Cloud Vision API is a powerful tool that allows developers to incorporate image recognition capabilities into their applications. With this API, you can analyze images to detect objects, text, faces, logos, and even emotions. In this didactic material, we will provide an overview of the Google Cloud Vision API and its various features.

One of the key advantages of using the Vision API is that you don't need to train your own models. Google has already trained models using a vast amount of data, making it easier for developers to get started. This saves time and effort compared to creating your own training models from scratch.

The Vision API offers several useful features. You can use it to detect objects in an image, such as identifying whether an image contains a car or a violin. It can also recognize text within an image, making it useful for tasks like extracting information from photos. Additionally, the API can analyze facial expressions and emotions, providing insights into the emotional state of a person in an image. Another feature is the ability to detect logos, allowing you to identify company logos in images.

The Vision API also provides functionality for attribute detection. For example, it can suggest an appropriate image ratio based on the ratio value you provide. It can also detect web entities and pages, finding similar images on the web to the one you provide. Lastly, the API supports product search, providing a list of similar

items based on the image you provide.

It's important to note that the pricing for the Vision API is based on usage. Each month, you receive 1000 free uploads that can be used across all categories. Once you exceed this limit, Google will charge you per 1000 units based on the categories you use. Make sure to review the pricing details to understand the costs associated with using the Vision API.

To get started with the Vision API, you will need to create a service account, enable the Vision API, and install the Vision API Python library. In the next material, we will guide you through these steps and show you how to create your first Python script to interact with the Vision API.

For more detailed information and documentation on the Google Cloud Vision API, you can refer to the official Vision API documentation page. It provides comprehensive resources and guides to help you make the most of this powerful tool.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: GETTING STARTED**
**TOPIC: CONFIGURATION AND SETUP**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING TEXT IN VISUAL DATA**
**TOPIC: DETECTING AND EXTRACTING TEXT FROM IMAGE**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING TEXT IN VISUAL DATA**
**TOPIC: DETECTING AND EXTRACTING TEXT FROM HANDWRITING**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING TEXT IN VISUAL DATA**
**TOPIC: DETECTING AND EXTRACTING TEXT FROM FILES (PDF/TIFF)**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING IMAGES**
**TOPIC: DETECTING CROP HINTS**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING IMAGES**
**TOPIC: DETECTING FACES**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING IMAGES**
**TOPIC: IMAGE PROPERTIES DETECTION**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: LABELLING IMAGES**
**TOPIC: LABELS DETECTION**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: ADVANCED IMAGES UNDERSTANDING**
**TOPIC: DETECTING LANDMARKS**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: ADVANCED IMAGES UNDERSTANDING**
**TOPIC: DETECTING LOGOS**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: ADVANCED IMAGES UNDERSTANDING**
**TOPIC: OBJECTS DETECTION**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: ADVANCED IMAGES UNDERSTANDING**
**TOPIC: EXPLICIT CONTENT DETECTION (SAFE SEARCH FEATURE)**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING WEB VISUAL DATA**
**TOPIC: DETECTING WEB ENTITIES AND PAGES**

This part of the material is currently undergoing an update and will be republished shortly.

**EITC/AI/GVAPI GOOGLE VISION API DIDACTIC MATERIALS**
**LESSON: UNDERSTANDING SHAPES AND OBJECTS**
**TOPIC: DRAWING OBJECT BORDERS USING PILLOW PYTHON LIBRARY**

This part of the material is currently undergoing an update and will be republished shortly.