



ChatGPT API - openai

Set up - Python



API Key

Go to : <https://platform.openai.com/overview>

Personal ⇒ Manage Account ⇒ API K + Create new secret key

Install "openai"

```
pip install openai
```

Import "openai"

```
import openai  
openai.api_key = "YOUR_API_KEY"
```



ChatGPT API - openai

Make a Call

Question to ChatGPT: What are the different types of machine learning models?

```
response=openai.ChatCompletion.create(  
    model='gpt-3.5-turbo',  
    messages=[{"role":"user",  
                "content":"What are the  
different types of machine learning models?"}  
    ]  
)
```

Model: gpt-3.5-turbo
⇒ Currently available
one in the API

3 important parameters:

Role: We use "user" as we are requesting the AI. There are also: "system" and "assistant". Have a look on the article to understand how to use them, and how they impact the answer.

Content: is analogous to the prompt you enter directly in the GUI.



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API Answer

You will get very detailed JSON object:

But the answer you want is here:

```
print(response.choices[0].message.content)
```

There are several types of machine learning models, including:

1. Supervised learning models: These models are trained on labeled data and are used to predict outcomes for new, unseen data. Examples include linear regression, logistic regression, decision trees, and random forests.
2. Unsupervised learning models: These models are trained on unlabeled data and are used to find patterns and relationships in the data. Examples include clustering algorithms, such as k-means and hierarchical clustering.
3. Semi-supervised learning models: These models are trained on a combination of labeled and unlabeled data and are used when there is not enough labeled data to train a supervised model. Examples include self-training and co-training algorithms.
4. Reinforcement learning models: These models learn by interacting with an environment and receiving feedback in the form of rewards or penalties. Examples include Q-learning and deep reinforcement learning.
5. Deep learning models: These models are a subset of neural networks and are used for complex tasks such as image and speech recognition. Examples include convolutional neural networks (CNNs) and recurrent neural networks (RNNs).

```
{
  "choices": [
    {
      "finish_reason": "stop",
      "index": 0,
      "message": {
        "content": "There are various types of machine learning models which are broadly categorized as follows:\n\n1. Supervised learning models: These models are trained using labeled data, which is used to predict output for new, unseen data. Examples of supervised learning models include regression, decision trees, random forests, support vector machines (SVM), naive Bayes, and neural networks.\n\n2. Unsupervised learning models: These models are trained using unlabeled data, which is used to identify patterns and relationships in data. Examples of unsupervised learning models include clustering, dimensionality reduction, and association rule learning.\n\n3. Semi-supervised learning models: These models are trained using a combination of labeled and unlabeled data, which is used to improve the accuracy of the model's predictions. Examples of semi-supervised learning models include self-training and co-training.\n\n4. Reinforcement learning models: These models learn through trial and error by receiving feedback in the form of rewards or punishments for their actions. Examples of reinforcement learning models include Q-learning and deep reinforcement learning.",
        "role": "assistant"
      }
    }
  ],
  "created": 1688454677,
  "id": "chatcmpl-71f77a70c237c6c306b0mmycyl",
  "model": "gpt-3.5-turbo-0613",
  "object": "chat.completion",
  "usage": {
    "completion_tokens": 288,
    "prompt_tokens": 16,
    "total_tokens": 304
  }
}
```



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"Assistant" role

You can use the assistant role to act like a memory of past conversations. Here is how:

- After asking the question: *What are the different types of machine learning models?* I get very detailed answer on 4 bullet points. **I store this answer in the variable "first_message"**
- Now, for each category I want the AI to give me a model example and its explanation, by using the **assistant role** like this:

```
first_message=response.choices[0].message.content
response=openai.ChatCompletion.create(
    model='gpt-3.5-turbo',
    messages=[{"role":"assistant", "content":first_message},
              {"role":"user",
               "content":"Give me an explanation of one example
model for each category that you just gave"}
              ]
)

second_message = response.choices[0].message.content
print(second_message )
```



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"Assistant" role

Awesome answer!

Sure, here are some examples of machine learning models for each category:

1. Supervised learning model: Decision Trees - Decision trees are a type of supervised learning model that can be used for both classification and regression tasks. They work by recursively splitting the data into smaller subsets based on the most important features until a decision is made.
2. Unsupervised learning model: K-Means Clustering - K-means clustering is a type of unsupervised learning model that is used to group similar data points together. It works by randomly assigning data points to clusters and then iteratively refining the clusters until the data points are grouped together in the most optimal way.
3. Semi-supervised learning model: Co-Training - Co-training is a type of semi-supervised learning model that is used when there is not enough labeled data to train a supervised model. It works by training two separate models on different subsets of the data and then using the predictions from one model to label the data for the other model.
4. Reinforcement learning model: Q-Learning - Q-learning is a type of reinforcement learning model that is used to learn optimal policies for decision-making tasks. It works by updating a Q-table that stores the expected rewards for each action in each state, based on the feedback received from the environment.
5. Deep learning model: Convolutional Neural Networks (CNNs) - CNNs are a type of deep learning model that are commonly used for image recognition tasks. They work by using convolutional layers to extract features from the input image and then passing these features through fully connected layers to make a prediction.

Complete version of the article (more details on assistant and system roles) :

 [Learn how to use ChatGPT API openai Within Python](#)