Berkeley Engineering | BerkeleyHaas

PROFESSIONAL CERTIFICATE IN MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

Module 23 Office Hour with Jessica Cervi

March 6th, 2025 at 6pm UTC

What is Generative AI?

Generative AI: Transforming Creativity & Automation

Generative AI refers to artificial intelligence models that create new content, including text, images, music, and code, by learning from vast datasets. Using advanced machine learning techniques like deep learning and neural networks, these models generate human-like outputs, enabling applications in content creation, design, data synthesis, and automation. Popular examples include ChatGPT for text, DALL·E for images, and GitHub Copilot for coding.

Key Benefits:
- Automates creative tasks
- Enhances productivity
- Personalizes user experiences

Revolutionizing industries from marketing to healthcare and beyond!

An Overview of OpenAI and its API

OpenAI is an AI research and deployment company working on the mission of ensuring that artificial general intelligence benefits all of humanity.

The OpenAI API (Application Programming Interface) serves as a bridge to OpenAI's powerful machine learning models, allowing you to integrate cutting-edge AI capabilities into your projects with ease.

For example, you can add cool features like understanding and creating text without having to know all the nitty-gritty details of the underlying models.

Features of the OpenAI API

1. **Pre-trained AI models:** The AI models are released in API form, meaning "they train once, we use many times," which can be a huge time and resource saver. Some of these models include GPT-4, DALL-E, Whisper, etc.

2. **Customizable AI models:** Customizing models in the OpenAI API primarily involves a process known as fine-tuning, which allows users to adapt pre-trained models to better suit their specific use cases.

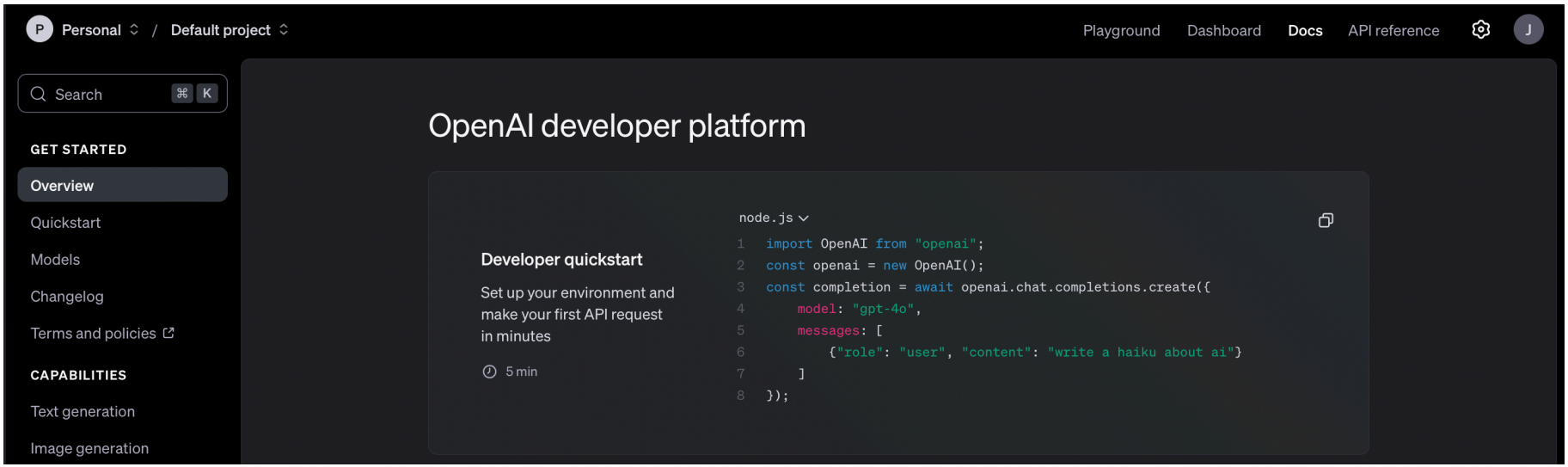
3. **Simple API interface:** The OpenAI API platform is intuitive and simple for a beginner to use. It's straightforward to start using the API in your use cases without having to traverse a steep learning curve.

4. **Scalable infrastructure:** As your projects become larger and more complex, you need an infrastructure that can grow with them. OpenAI API's ability to scale when usage increases is especially useful when you move from small projects to larger, more demanding ones.

Getting Started with the OpenAI API

Step 1: Create an OpenAI platform account

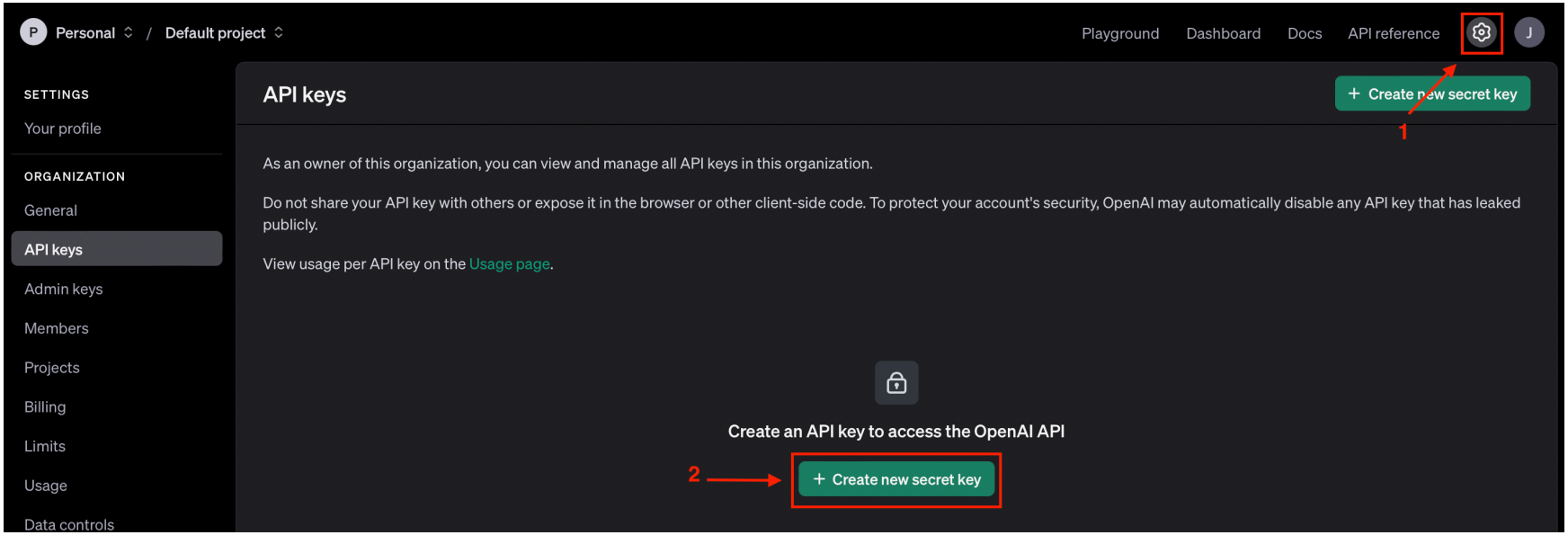
Navigate to the **OpenAI's platform** and follow the prompts to create an account. You should be seeing something like this once signed up:



Getting Started with the OpenAI API

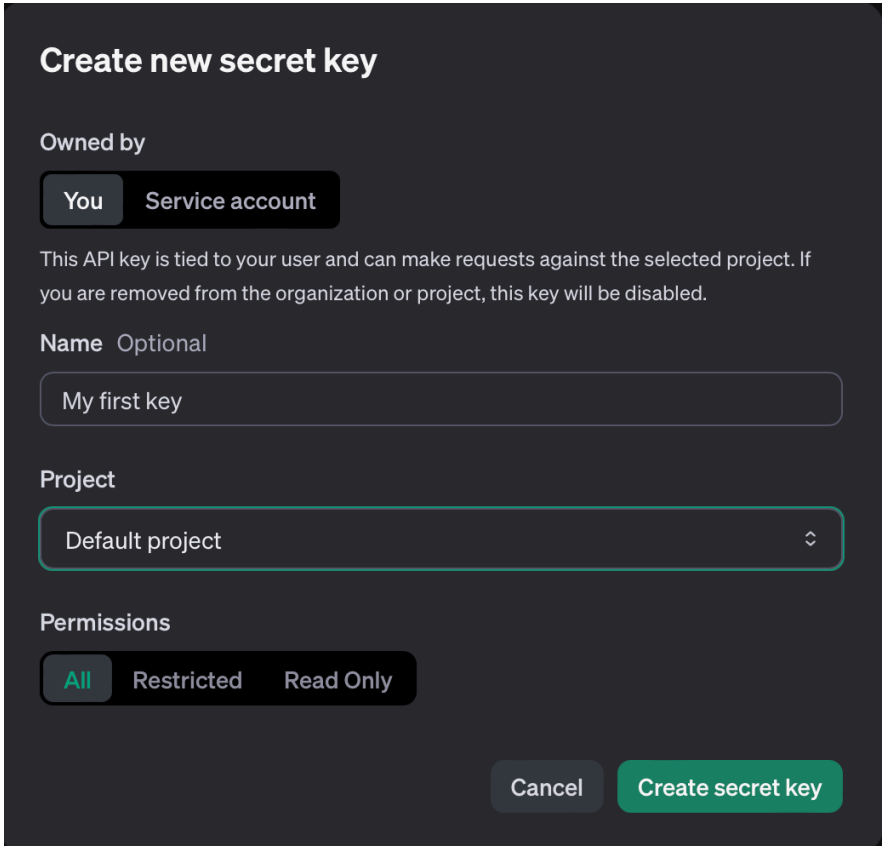
Step 2: Get your API key: Once your account is set up, you'll need to retrieve your API key, which is essential for interacting with the API.

To create an API key, click on the gear icon at the top of the page, then select "+ Create new secret key" as shown in the image below.



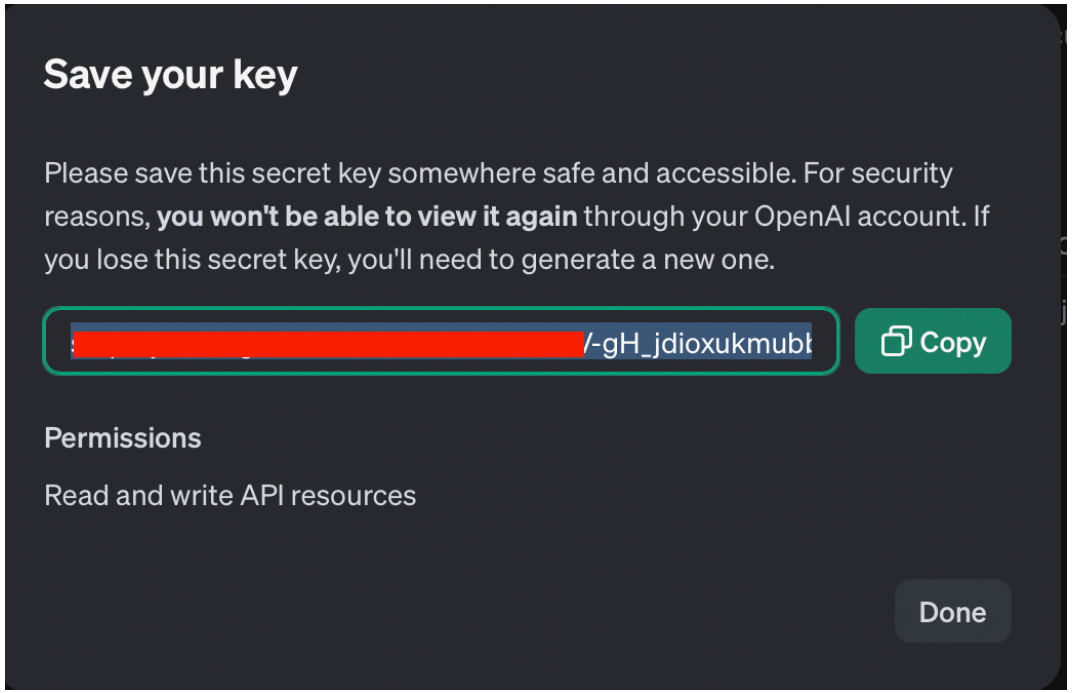
Getting Started with the OpenAI API

Step 3: Name your API key: In the next modal, give a name to your API key and select the “Default project” from the drop-down menu. Then click on “Create secret key”.



Getting Started with the OpenAI API

Step 4: Save your API key: Once created, you must save the newly created API key to a secure location. You won't be able to see or copy the API key from OpenAI again.



Getting Started with the OpenAI API

Step 5: Install and Use the OpenAI library: Once you have your API key, you can start using OpenAI for your projects.

This **Google Colab notebook** contains examples about how to use the OpenAI API

Introduction to Hugging Face

Hugging Face is a machine learning and data science platform and community that helps users build, deploy and train machine learning models.

Users can browse through models and data sets that other people have uploaded. Hugging Face is often called the GitHub of machine learning because it lets developers share and test their work openly.

The platform is important because of its open source nature and deployment tools. It allows users to share resources, models and research and to reduce model training time, resource consumption and environmental impact of AI development.

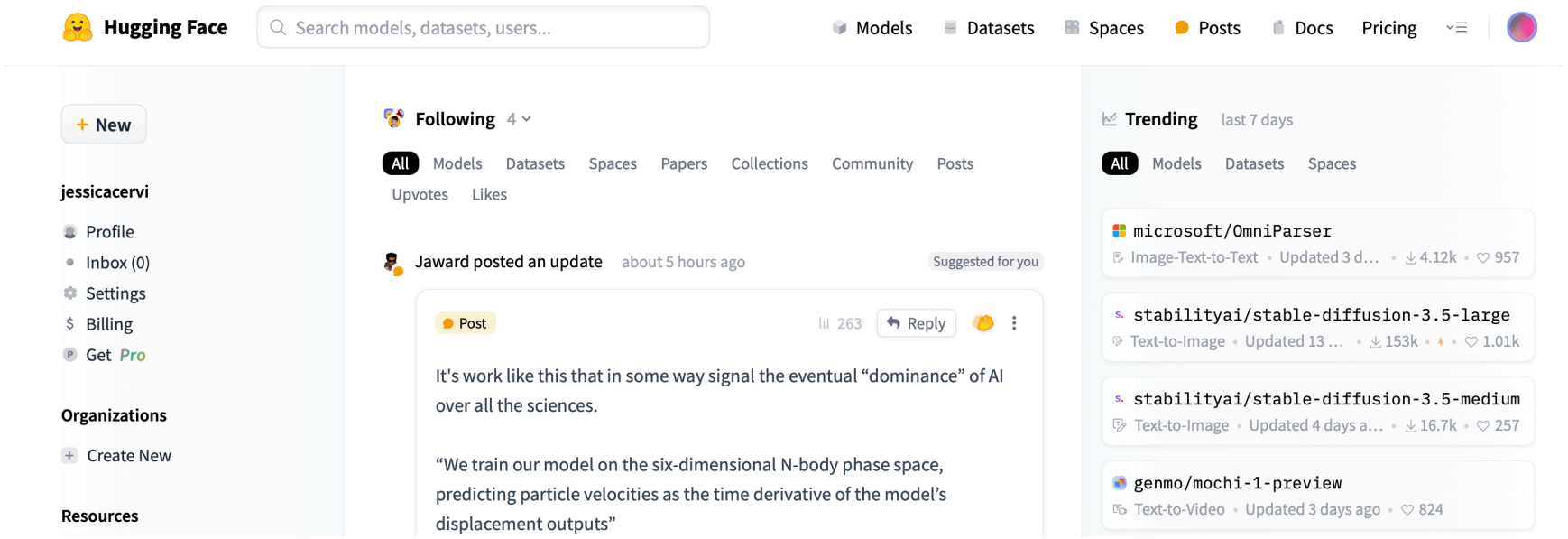
Benefits of using Hugging Face

1. **Accessibility.** Hugging Face helps users bypass restrictive compute and skill requirements typical of AI development.
2. **Integration.** Hugging Face helps users integrate multiple ML frameworks such as TensorFlow and PyTorch
3. **Community.** Hugging Face provides access to a vast community, continuously updated models, and documentation and tutorials.
4. **Cost-effective.** Hugging Face provides cost-effective and scalable solutions for businesses. Building large ML models from scratch can be expensive, and using Hugging Face's hosted models saves money.

Hugging Face

Getting Started with Hugging Face

[Join Hugging Face](#) and begin exploring



Getting Started with Hugging Face

This **Google Colab notebook** contains an example about using HuggingFace

Questions?