



Building Generative AI Applications

The art, science, and engineering of Generative AI

Learning Outcomes

By the end of this workshop you will:

1. Learn how prompt engineering and fine-tuning should be used together to optimize the output of large pre-trained models
2. Fine-tune a Large Language Model (LLM) or text-to-image diffusion model using a data-centric approach
3. Deploy your very own Generative AI application to Hugging Face

Project-Based Learning

During this course, ***you will build, ship, and share your own end-to-end Generative AI application.*** Each individual/team will be judged on their application's uniqueness, fine-tuning creativity, user experience, and by a single piece of content generated by their AI application. The winner(s) of the workshop's competition will be announced at the next DeepLearning.ai + FourthBrain event!

Pre-Work

Before the workshop, you should:

- Work through the [Hugging Face Course](#) to familiarize yourself with the platform and set up your development environment if you don't work with one regularly.
- If you don't already have a project in mind, choose diffusion modeling problem (e.g., [Generating E-Commerce Product Images](#)) OR an LLM problem to work on (e.g., [Structure fine-tuning for Marketing Ad Generation](#)).



Detailed Schedule

Module	Topics	Build Activities
Introduction to Tools and Platforms ML Models, and MLOps Tech Stack 9:00 - 10:00 AM PT	Introduction and Networking ML Models & MLOps Stack Overview <ul style="list-style-type: none">Stable Diffusion, BLOOM, and Hugging Face	<ul style="list-style-type: none">Interactive End-to-End Stable Diffusion and BLOOM Demos on Hugging Face
Build Session 1 Data-Centric Approaches for Diffusion Models and LLMs 10:00- 11:00 AM PT	Data-Centric Approaches <ul style="list-style-type: none">Dataset Curation: Labeling and CaptioningExample Project Data for Stable Diffusion and BLOOM	<ul style="list-style-type: none">Syntax-Level Interactive Data Curation DemosData Collection, Processing, and/or Generation for Your Team's Project
Build Session 2 Garbage In, Garbage Out: Leveraging Model Fine-Tuning and Prompt Engineering to Optimize AI Application Output 11:00- 12:00 AM PT	Model Fine-Tuning <ul style="list-style-type: none">Hardware & Configuration Considerations Prompt Engineering <ul style="list-style-type: none">Best Practices for Stable Diffusion and BLOOM Process Recommendations <ul style="list-style-type: none">Step-by-Step Guide to Optimizing Outputs from Fine-Tuned Generative AI Models	<ul style="list-style-type: none">Syntax-Level Interactive Fine-Tuning Demos in Google ColabFine-Tuning of Your Team's Model
12:00 - 12:30 PM PT	Lunch Break	<ul style="list-style-type: none">1:1 Team Consulting Available
Ship Session 1 Deploying Your Application to Hugging Face 12:30 - 1:00 PM PT	Overview of The Hugging Face Stack <ul style="list-style-type: none">Datasets, Model Hub, Spaces with Gradio	<ul style="list-style-type: none">Interactive Hugging Face Deployment DemoDeploying Your Team's Application



Ship Session 2 Final Iterations and Packaging of Submissions 1:00 - 2:00 PM PT	<ul style="list-style-type: none">● Team Working Session	<ul style="list-style-type: none">● 1:1 Team Consulting Available
Share Session 1 Judging and Awards 2:00 - 2:30 PM PT	Judging Process and Award Ceremony	<ul style="list-style-type: none">● Providing Feedback to Other Teams
Share Session 2 Sharing Your Work 2:30 - 3:00 PM PT	Building your AI Brand in 2023 <ul style="list-style-type: none">● How to share your projects publicly	<ul style="list-style-type: none">● Interactive Community Session

* Activities in **Bold Pink** will be working sessions for you and/or your team! If you are working solo, we will pair you up with other individuals in a single breakout session.

[Register for Building Generative AI Applications](#)

About FourthBrain

FourthBrain trains engineers, developers, data scientists, and leaders to make an impact in the Artificial Intelligence field, with our flexible, accessible education programs. We are training a new generation of engineers and leaders who have more than just technical ability; they have an awareness and mindset of what is needed to succeed with AI. We are part of the AI Fund, founded by Andrew Ng.