Special Training Program basics into MLOps, Generative AI and LLMs.

# Introduction

This 5-week special training program is designed for a student to become competent in MLOps, Generative AI, and Large Language Models (LLMs), with a clear understanding of AI. The program aims to be friendly, enjoyable, and understandable, ensuring a comprehensive and fulfilling learning experience.

# Week 1: Foundations of AI and ML

## Objectives

1. Understand the fundamentals of AI and machine learning.  
2. Learn about different types of AI and their applications.  
3. Get hands-on experience with basic ML models.

## Tasks

1. Research and present on the history and evolution of AI.  
2. Implement a simple linear regression model using Python.  
3. Explore various AI applications in different industries through case studies.

# Week 2: Introduction to MLOps

## Objectives

1. Understand the principles and practices of MLOps.  
2. Learn about the tools and frameworks used in MLOps.  
3. Implement a basic MLOps pipeline.

## Tasks

1. Study and summarize key concepts of MLOps.  
2. Set up a simple MLOps pipeline using GitHub Actions and Docker.  
3. Deploy a machine learning model using a cloud service (e.g., AWS, GCP).

# Week 3: Generative AI

## Objectives

1. Learn about the fundamentals of generative AI.  
2. Explore different generative models and their applications.  
3. Implement a generative model using Python.

## Tasks

1. Research and present on different types of generative models (GANs, VAEs).  
2. Implement a basic Generative Adversarial Network (GAN) using TensorFlow or PyTorch.  
3. Create a generative art project using the implemented GAN model.

# Week 4: Large Language Models (LLMs)

## Objectives

1. Understand the concepts and architecture of LLMs.  
2. Learn about the applications and limitations of LLMs.  
3. Get hands-on experience with LLMs using popular frameworks.

## Tasks

1. Study and summarize the architecture of popular LLMs (GPT, BERT).  
2. Fine-tune a pre-trained LLM for a specific task using Hugging Face Transformers.  
3. Develop a small application using the fine-tuned LLM (e.g., chatbot, text summarizer).

# Week 5: Integration and Advanced Projects

## Objectives

1. Integrate knowledge from previous weeks into comprehensive projects.  
2. Work on advanced projects that demonstrate expertise in MLOps, Generative AI, and LLMs.  
3. Present and review projects, providing and receiving constructive feedback.

## Tasks

1. Plan and outline a capstone project that integrates MLOps, Generative AI, and LLMs.  
2. Develop the capstone project, applying best practices and techniques learned.  
3. Present the capstone project, receive peer feedback, and discuss improvements.

# Additional Resources and Activities

Weekly Code Reviews: Encourage peer code reviews for continuous improvement.  
Stand up cycles: Team discussion sharing progress, challenges and take away.  
Hackathons: Organize mini-hackathons to foster creativity and teamwork.  
Mentorship Sessions: Pair to pair conversation between students and mentors.