Let's create a structured work plan to help you cover the necessary material and work on relevant projects. This plan will balance your deep learning and generative AI studies with practical project implementation. Here's a detailed plan:

### Week 1: Introduction and Foundations

#### Day 1-2: Introduction to Generative AI and OpenAI API

- \*\*Watch:\*\*

- Introduction to Generative AI Community Course (01:44:14)

- Introduction to OpenAI and understanding the OpenAI API (03:37:49)

- \*\*Project:\*\*

- Create a simple web app that uses OpenAI's API to generate text based on user input.

- Example: A creative writing assistant that suggests story continuations.

#### Day 3-4: LangChain and Hugging Face API

- \*\*Watch:\*\*

- Introduction to LangChain (05:16:48)

- Hugging Face API + LangChain (07:13:08)

- \*\*Project:\*\*

- Integrate Hugging Face models into your web app.

- Example: Enhance the creative writing assistant to offer style and tone adjustments using Hugging Face models.

#### Day 5-6: Memory in LangChain and LLM Generative AI Project

- \*\*Watch:\*\*

- Memory in LangChain (09:07:53)

- LLM Generative AI Project using OpenAI & LangChain (11:03:29)

- \*\*Project:\*\*

- Implement memory in your application to retain conversation context.

- Example: The writing assistant remembers previous user interactions to provide more coherent suggestions.

#### Day 7: Deployment

- \*\*Watch:\*\*

- LLM Generative AI Project & Deployment (13:09:02)

- \*\*Project:\*\*

- Deploy your application to a cloud service (e.g., Heroku, Vercel).

- Example: Deploy the creative writing assistant for public use.

### Week 2: Advanced Concepts and New Tools

#### Day 8-10: Vector Databases

- \*\*Watch:\*\*

- Introduction to Vector Database for AI & LLM (14:52:41)

- Mastering Vector Databases with Pinecone (17:02:19)

- Mastering ChromaDB Vector Databases (19:04:25)

- \*\*Project:\*\*

- Integrate vector databases to improve your application’s search capabilities.

- Example: Use vector databases to enable searching through generated content by similarity.

#### Day 11-13: Meta Llama 2 and Medical Chatbot Project

- \*\*Watch:\*\*

- Introducing Meta Llama 2 (20:54:33)

- End to End Medical Chatbot Project, Part 1 (22:36:05)

- End to End Medical Chatbot Project, Part 2 (24:22:10)

- \*\*Project:\*\*

- Adapt the chatbot concepts to create a customer support bot for your writing assistant.

- Example: Implement a bot that answers user questions about using the writing assistant.

### Week 3: Deep Learning with PyTorch

#### Day 14-16: PyTorch Fundamentals

- \*\*Watch:\*\*

- PyTorch Fundamentals (Chapters 0-1)

- \*\*Project:\*\*

- Build a simple neural network for a classification task.

- Example: Image classifier for different types of artwork (e.g., paintings, sketches).

#### Day 17-19: Neural Network Classification

- \*\*Watch:\*\*

- Neural Network Classification (Chapter 2)

- \*\*Project:\*\*

- Enhance your classifier with advanced techniques.

- Example: Multi-class classification for more detailed art styles.

### Week 4: Computer Vision and Custom Datasets

#### Day 20-22: Computer Vision with CNNs

- \*\*Watch:\*\*

- Computer Vision (Chapter 3)

- \*\*Project:\*\*

- Implement a convolutional neural network (CNN) for image classification.

- Example: Classify user-uploaded images based on art styles.

#### Day 23-25: Custom Datasets

- \*\*Watch:\*\*

- Custom Datasets (Chapter 4)

- \*\*Project:\*\*

- Create and use custom datasets for training your models.

- Example: Collect and label a dataset of different art styles for your classifier.

### Week 5: Final Projects and Integration

#### Day 26-30: Finalizing Projects and Integration

- \*\*Projects:\*\*

- Integrate your deep learning models into your web app.

- Example: The creative writing assistant now includes an art style classifier that suggests relevant styles based on text input.

#### Ongoing: Practice and Documentation

- \*\*Practice:\*\*

- Regularly practice coding and refine your projects.

- Participate in online forums and communities for feedback.

- \*\*Documentation:\*\*

- Document your learning process and project development for your final year project report.

By following this structured plan, you'll be able to cover both theoretical and practical aspects of deep learning and generative AI, resulting in a comprehensive and impressive final year project.