### **Project 13: AI-powered Application**

#### **Objective:**

Develop an AI-powered application, such as a sentiment analysis tool, image classifier, or recommendation system. Integrate the model into a web or desktop application using Streamlit or Flask.

### **Instructions**

#### **Step 1: Set Up the Environment**

1. Create a new Python file called ai\_application.py.

Install the required libraries:  
Copy code  
pip install scikit-learn pandas flask streamlit nltk

#### **Step 2: Define the Application Use Case**

1. Choose a use case for the application, such as sentiment analysis on text data using the nltk library.

For sentiment analysis, import necessary modules:  
python  
Copy code  
import nltk

from nltk.sentiment.vader import SentimentIntensityAnalyzer

import pandas as pd

Download necessary resources:  
python  
Copy code  
nltk.download('vader\_lexicon')

#### **Step 3: Create the Sentiment Analysis Function**

Define a function called analyze\_sentiment(text) that uses SentimentIntensityAnalyzer to classify the sentiment of a given text.  
python  
Copy code  
def analyze\_sentiment(text):

sid = SentimentIntensityAnalyzer()

sentiment\_scores = sid.polarity\_scores(text)

return sentiment\_scores

Test the function:  
python  
Copy code  
text = "Python is an amazing programming language!"

sentiment = analyze\_sentiment(text)

print(f"Sentiment Analysis: {sentiment}")

#### **Step 4: Create a Web Interface with Streamlit**

Use Streamlit to create a simple web interface for the application:  
python  
Copy code  
import streamlit as st

def main():

st.title("AI-powered Sentiment Analysis Tool")

user\_input = st.text\_area("Enter text to analyze sentiment:", "")

if st.button("Analyze"):

result = analyze\_sentiment(user\_input)

st.write(f"Sentiment Analysis Result: {result}")

if \_\_name\_\_ == "\_\_main\_\_":

main()

#### **Step 5: Run the Streamlit Application**

Run the script using the command:  
arduino  
Copy code  
streamlit run ai\_application.py

1. Open the browser window that Streamlit launches and test the sentiment analysis feature.