**Steps to Create a Chatbot Web Application with Plotly Dash**

Here's a detailed guide to building a simple chatbot web application using Plotly Dash:

**1. Setup**

Install the necessary libraries:

pip install dash pandas nltk scikit-learn plotly

**2. Import Libraries**

import pandas as pd

import nltk

from sklearn.feature\_extraction.text import TfidfVectorizer

from sklearn.naive\_bayes import MultinomialNB

from sklearn.pipeline import make\_pipeline

from sklearn.model\_selection import train\_test\_split

import dash

from dash import dcc, html

from dash.dependencies import Input, Output

import plotly.graph\_objs as go

import random

**3. Load and Preprocess Data**

# Load the dataset

data = pd.read\_csv('chatbot\_dataset.csv')

# Preprocess the data

nltk.download('punkt')

data['Question'] = data['Question'].apply(lambda x: ' '.join(nltk.word\_tokenize(x.lower())))

# Split the data into training and test sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(data['Question'], data['Answer'], test\_size=0.2, random\_state=42)

# Create a model pipeline

model = make\_pipeline(TfidfVectorizer(), MultinomialNB())

model.fit(X\_train, y\_train)

**4. Define the Chatbot Response Function**

def get\_response(question):

question = ' '.join(nltk.word\_tokenize(question.lower()))

answer = model.predict([question])[0]

return answer

**5. Setup Dash App**

# Initialize the Dash app

app = dash.Dash(\_\_name\_\_)

# Define the layout

app.layout = html.Div([

html.H1("Chatbot", style={'textAlign': 'center'}),

dcc.Textarea(

id='user-input',

value='Type your question here...',

style={'width': '100%', 'height': 100}

),

html.Button('Submit', id='submit-button', n\_clicks=0),

html.Div(id='chatbot-output', style={'padding': '10px'})

])

# Define callback to update chatbot response

@app.callback(

Output('chatbot-output', 'children'),

Input('submit-button', 'n\_clicks'),

[dash.dependencies.State('user-input', 'value')]

)

def update\_output(n\_clicks, user\_input):

if n\_clicks > 0:

response = get\_response(user\_input)

return html.Div([

html.P(f"You: {user\_input}", style={'margin': '10px'}),

html.P(f"Bot: {response}", style={'margin': '10px', 'backgroundColor': '#f0f0f0', 'padding': '10px', 'borderRadius': '5px'})

])

return "Ask me something!"

# Run the app

if \_\_name\_\_ == '\_\_main\_\_':

app.run\_server(debug=True)

**6. Run the Application**

Save the above code to a .py file and run it:

python chatbot\_app.py

**Access the Application**

Open a web browser and go to http://127.0.0.1:8050/ to see your chatbot in action.

**Summary**

* **Libraries:** Install Dash, Plotly, pandas, scikit-learn, and nltk.
* **Data Handling:** Load and preprocess the data, create a model pipeline.
* **Chatbot Logic:** Define a function to generate responses.
* **Dash App:** Create a simple web interface with a text area and a submit button.
* **Run:** Execute the app script and interact with your chatbot.