```
import gradio as gr
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import ollama

# function to perform EDA and Generate visualization
def eda_analysis(file_path):
    df = pd.read_csv(file_path)   # my datset read file path (app.py(in EDA LLM Folder ))

    # fill missing values with median for numeric columns
    for col in df.select_dtypes(include=['numbers']).columns:          # for col--> for entire column
        df[col].fillna(df[col].median(), inplace=True)



    # fill missing values with median for categorical columns
    for col in df.select_dtypes(include=['object']).columns:
        df[col].fillna(df[col].mode()[0] , inplace=True)

     # data summary
    summary = df.describe(include='all').to_string()



    # missing values
    missing_values = df.isnull().sum().to_string()

    # Generate AI Insights
    insights = generate_ai_insights(summary)

    #Generate data viz
    plot_paths = generate_visualizations(df)
```

```
    return f"\n Data Loaded Successfully!\n\n Summary:\n{summary}\n\n Missing Values:\n{missing_values}\n\n AI Insights:\n{insights}", plot_paths

# AI-Powered Insights using Mistral-7B (Ollama)
def generate_ai_insights(df_summary):
    prompt = f"Analyze the dataset summary and provide insights:\n\n{df_summary}"
    response = ollama.chat(model="gemma:2b", messages=[{"role": "user", "content": prompt}])
    return response['message']['content']

# Function to Generate Data Visualizations
def generate_visualizations(df):
    plot_paths = []

    # Histograms for Numeric Columns
    for col in df.select_dtypes(include=['number']).columns:
        plt.figure(figsize=(6,4))
        sns.histplot(df[col], bins=30, kde=True, color="blue")
        plt.title(f"Distribution of {col}")
        path = f"{col}_distribution.png"
        plt.savefig(path)
        plot_paths.append(path)
        plt.close()

    # Correlation Heatmap (only numeric columns)
    numeric_df = df.select_dtypes(include=['number'])
    if not numeric_df.empty:
        plt.figure(figsize=(8,5))
        sns.heatmap(numeric_df.corr(), annot=True, cmap='coolwarm', fmt=".2f", linewidths=0.5)
        plt.title("Correlation Heatmap")
        path = "correlation_heatmap.png"
```

```
        plt.savefig(path)
        plot_paths.append(path)
        plt.close()

    return plot_paths

# Gradio Interface
demo = gr.Interface(
    fn=eda_analysis,
    inputs=gr.File(type="filepath"),
    outputs=[gr.Textbox(label="EDA Report"), gr.Gallery(label="Data Visualizations")],
    title="📊 LLM-Powered Exploratory Data Analysis (EDA)",
    description="Upload any dataset CSV file and get automated EDA insights with AI-powered analysis and visualizations."
)

# Launch the Gradio App
demo.launch(share=True)
```