

EXP 2. Comparative Analysis of Navie Prompting Versus Basic prompting across various test scenario

AIM:

To test how ChatGPT responds to naïve prompts (broad or unstructured) versus basic prompts (clearer and more refined) across multiple scenarios, analyzing the quality, accuracy, and depth of the generated responses.

1.Zero shot Prompting:

Give me some idea about diabetes prediction system?

ChatGPT said:

Key Features

1. Health Parameter Analysis

- **Description:**
Analyze features such as glucose levels, blood pressure, BMI, insulin levels, and age to assess diabetes risk.
- **Use Case:**
 - Input patient health data into the system, and it predicts whether the individual is diabetic or non-diabetic.
 - Provides insights into critical health factors contributing to the risk.

2. Machine Learning-Based Predictions

- **Description:**
Trains machine learning models like SVM, Logistic Regression, Random Forest, and XGBoost to classify patients as diabetic or non-diabetic based on historical data.
- **Use Case:**
 - Models are trained on datasets such as the PIMA Indian Diabetes Dataset.
 - The system achieved 90% accuracy with the SVM model, making it a reliable tool for prediction.

3. User-Friendly Interface

- **Description:**
Developed using frameworks like Flask or Streamlit, the interface allows users to input data and view results interactively.
- **Use Case:**
 - Healthcare professionals or individuals can input patient details like glucose levels, age, and BMI to receive immediate predictions.

Methodology

1. Data Preprocessing:

- Handle missing values, normalize features, and split data into training and testing sets.

2. Exploratory Data Analysis (EDA):

- Visualize data relationships using heatmaps and graphs.
- Identify important features affecting diabetes prediction.

3. Model Training:

- Train and evaluate machine learning models using accuracy, precision, recall, and F1-score metrics.

4. Deployment:

- Integrate the best-performing model into a web application for practical use.
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Applications

- Helps healthcare providers detect diabetes in patients early.
- Provides awareness for individuals to understand their risk factors.
- Facilitates timely intervention to manage diabetes effectively.

Key Benefits

- High accuracy in diabetes prediction (90% with SVM).
- Reduces manual efforts in analyzing patient data.
- Accessible and scalable solution for healthcare systems.

Interview pattern:

Ask me a question regarding smart vision technology?

Here are some questions regarding the Diabetes Prediction System to ensure clarity and provide targeted assistance:

1. **Data Collection:**
 - Have you decided on the dataset you'll use? (e.g., PIMA Indian Diabetes Dataset from Kaggle)
 - Does the dataset have any missing values, and if so, how do you plan to handle them?
2. **Features:**
 - Which features are you focusing on for prediction?
 - Do you need help identifying which features might have the highest correlation with diabetes?
3. **Model Selection:**
 - Which machine learning models are you planning to use?
 - Would you like guidance on choosing hyperparameters for models like SVM or XGBoost?
4. **Metrics and Evaluation:**
 - What metrics will you use to evaluate your model's performance? (e.g., accuracy, precision, recall, F1-score)
 - Do you need help with interpreting the results of model evaluations?
5. **Interface and Deployment:**
 - How do you plan to deploy your system? (e.g., web app, desktop app)
 - Would you like help building a user-friendly interface using Flask or Streamlit?
6. **Optimization:**
 - Are you planning to optimize the model further using techniques like hyperparameter tuning or feature selection?
 - Would you like to integrate cross-validation for better accuracy?
7. **Next Steps:**
 - Do you plan to extend the system for additional use cases, like monitoring a patient's health over time?
 - Would you like suggestions on integrating this system with wearable devices for real-time data collection?

2. Few-shot prompting:

The already existing system based on the diabetes prediction system in the titles of proposed methodology, outcome, result and existing system?

ChatGPT said:

Existing System

- **Description:**
Current diabetes prediction systems often rely on manual data analysis or basic statistical models that lack the robustness of modern machine learning techniques.
- **Limitations:**
 - Require extensive manual effort for data interpretation.
 - Lack real-time prediction capabilities.
 - May not efficiently handle large datasets or complex patterns in data.
 - Lower accuracy in predictions compared to advanced machine learning models.

Proposed Methodology

1. **Data Collection and Preprocessing:**
 - Use datasets like the PIMA Indian Diabetes Dataset.
 - Handle missing values, normalize features, and perform exploratory data analysis to identify correlations.
2. **Model Training and Optimization:**
 - Implement multiple machine learning algorithms such as SVM, Logistic Regression, Decision Trees, Random Forest, and XGBoost.
 - Evaluate models using metrics like accuracy, precision, recall, and F1-score.
 - Perform hyperparameter tuning for optimal model performance.
3. **System Development:**
 - Build a user-friendly interface using frameworks like Flask or Streamlit.
 - Allow real-time data input and immediate predictions for users.
4. **Deployment:**
 - Deploy the system as a web or desktop application for ease of access.
 - Ensure scalability for integration with larger healthcare systems or devices.

Outcome

- A highly accurate and user-friendly prediction system for diabetes diagnosis.
- Faster and more reliable predictions compared to existing systems.
- Reduction in manual effort required for diagnosis.
- Increased awareness and early detection, enabling better management of diabetes.

Result

- The system achieves **90% accuracy** using the SVM model, outperforming traditional methods.
- Demonstrates strong performance in predicting diabetes using key health parameters.
- Provides a seamless interface for both healthcare professionals and individuals.
- Successfully flags high-risk patients for early intervention and treatment.

Summary of Different Prompting Techniques:

Zero-Shot Prompting:	Interview Pattern Prompting:	Few-Shot Prompting:
Prompt: "Give me some idea about diabetes prediction system."	Prompt: "Ask me a question about the required skills and ideology in the perspective of the reviewer."	Prompt: "Compare the already existing system based on this Diabetes Prediction System in the titles of proposed methodology, outcome, result, and existing system."

It gives high-level ideas on how the system works , including defect detection, barcode verification, packaging monitoring, etc.	Focuses on interview-style questions about how the user's existing skills, such as working with technologies like AI, ML, align with the system's requirements.	Few-shot prompting provides a detailed and structured comparison between the existing and the proposed systems.
Zero-shot prompting provides a simple response, focusing on the overview and application of the system without requiring specific prior context.	It contains the form of asking a question like the process of interview and give the answer for the required skillset and tech stack of the given input of question format	Offers richer and more detailed responses by drawing on specific examples or data points, improving the accuracy and relevance of the response.

Zero-shot prompting provides an overview of the diabetes prediction system, focusing on general functionality like defect detection and packaging monitoring. It generates interview questions that assess basic knowledge, without requiring detailed context. Few-shot prompting, on the other hand, creates in-depth responses by incorporating specific examples or comparisons, offering tailored interview questions that explore the candidate's practical skills and experience. This leads to a richer understanding of how the candidate's expertise aligns with the technology, making it useful for more thorough evaluations.

OUTPUT:

