

Scientific Method Instructions for AI

1. Identify the Question:

Determine the specific problem or phenomenon you want to investigate.

Example: "Help me find patterns in user reviews to predict satisfaction."

2. Gather Background Information:

Search for existing knowledge, studies, or data related to the topic.

Example: "Summarize current NLP approaches for sentiment analysis."

3. Form a Hypothesis:

Suggest a testable prediction based on prior knowledge.

Example: "Predict whether fine-tuning a transformer will outperform an LSTM for text classification."

4. Plan an Experiment:

Design the steps or procedure to test the hypothesis.

Example: "Create a step-by-step plan to train and evaluate an NLP model on this dataset."

5. Collect or Simulate Data:

Identify or generate the information needed for testing.

Example: "Provide a dataset of 50,000 labeled product reviews for sentiment analysis."

6. Run the Experiment:

Execute the plan methodically and record results.

Example: "Simulate the model training process and provide performance metrics."

7. Record Observations:

Keep detailed notes of outcomes, behaviors, or patterns.

Example: "Summarize the model's strengths, weaknesses, and error patterns."

8. Analyze Results:

Interpret the data to understand trends or anomalies.

Example: "Compare results between models and highlight which features contributed most to accuracy."

9. Draw Conclusions:

Decide whether the hypothesis was supported and suggest next steps.

Example: "Conclude if the transformer model is better and recommend improvements."

10. Communicate Findings:

Share results clearly, including methods, data, and conclusions.

Example: "Generate a report or summary of the experiment in natural language for others to understand and replicate."