Ein Bild, das Text, Screenshot, Zahl, Software enthält.

Automatisch generierte Beschreibung

**Explanation of results based on feature importance and hypotheses**

The bar chart provided shows the feature importance derived from a RandomForestClassifier model, which indicates the relative contribution of each feature to predicting the target variable, in this case valence - the emotional response (happiness or satisfaction) after interacting with the AI assistant.

**Key observations:**

**1. Understanding of response behavior:**

- Importance: This feature has the highest importance score, indicating that how well the user understands the AI assistant's answer behaviour is the most important predictor of their emotional valence.

- Hypothesis Alignment: This is consistent with our hypothesis that users who can better understand and interpret AI output are likely to have a more positive emotional experience. Better understanding reduces confusion or frustration, leading to higher valence scores.

**2. Task time (task\_time):**

- Importance: Task time is the second most important feature. This suggests that the time it takes to complete a task strongly influences the user's emotional response.

- Hypothesis alignment: This is consistent with our hypothesis that longer task times, indicating more complex or frustrating tasks, negatively affect emotional valence. Faster completion is likely to correlate with simpler, more satisfying interactions, resulting in higher valence.

**3. Prompt length (prompt\_length):**

- Importance: Prompt length is also a significant predictor. Longer prompts may help to provide clearer instructions to the AI, which could facilitate more accurate responses.

- Hypothesis alignment: As predicted, a well-designed prompt (longer, more detailed) is likely to lead to better outcomes and thus higher satisfaction, which increases user valence.

**4. Satisfaction with generative AI assistants (Satisfaction):**

- Significance: As expected, user satisfaction with AI assistants is an important predictor. Higher satisfaction is generally associated with positive emotional outcomes.

- Hypothesis alignment: This is consistent with our hypothesis that general satisfaction with AI technology correlates with positive experiences in specific interactions, leading to higher valence scores.

**5. Number of prompt interactions (prompt\_times):**

- Significance: The number of interactions with the AI also significantly influences valence.

- Hypothesis alignment: Our hypothesis suggested that more interactions could indicate either difficulty (leading to frustration and lower valence) or persistence in refining the task, which could improve the outcome and increase valence. The moderate importance score suggests that the effect might vary depending on the context.

**6. Experience with analysis tools (experience\_analysis\_tools):**

- Significance: Users' experience with analysis tools moderately influences valence. More experience is likely to contribute to a better understanding and effective use of AI tools.

- Hypothesis Alignment: This supports the idea that experienced users are more adept at interacting with AI, which positively influences their emotional response.

**7. Task difficulty (task\_difficulty):**

- Significance: Task difficulty is a less significant predictor compared to other variables, although it still plays a role.

- Hypothesis alignment: As hypothesised, higher difficulty could reduce valence due to increased complexity and potential frustration. However, the lower importance score suggests that other factors, such as understanding and satisfaction, may mediate this relationship.

**8. Sentiment of the initial prompt (prompt\_VADER):**

- Importance: Sentiment of initial prompt (prompt\_VADER) is also a relevant predictor, although less important than other factors.

- Hypothesis alignment: This is consistent with the hypothesis that a user's initial mood or sentiment influences their overall experience. A positive start is likely to lead to a more positive finish, resulting in higher valence.

**Summary**:

The results largely confirm our hypotheses, highlighting that a combination of task complexity, user characteristics and initial mood contribute to the emotional valence experienced during interactions with AI assistants. The most influential factors are the user's understanding of the AI's behavior and the time taken to complete tasks, with satisfaction and prompt characteristics also playing a crucial role. These findings suggest that improving user understanding and optimising task completion times could be key strategies for improving emotional outcomes in AI-assisted interactions.