

Peer Review

Review of: "Large Language Model Interface for Home Energy Management Systems"

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The following comments need to be addressed by the authors:

1. The introduction explains the significance of Home Energy Management Systems (HEMS) and LLM-based interfaces but lacks focus. It dives into various details before clearly defining the research gap. Also, the methodology is dense. To improve it:

Refine the introduction to emphasize the research gap and highlight the novelty of integrating LLMs into HEMS more succinctly. Use subsections to break down dense methodological content.

2. There is a lack of explanation regarding why cosine similarity was chosen to measure user precision, and other metrics like BLEU or ROUGE are not considered. To improve it:

Compare cosine similarity with alternative metrics to demonstrate its reliability for measuring user precision.

3. The paper focuses primarily on the retrieval accuracy of parameters but does not analyze deeper LLM behaviors, such as error types or adaptation across different difficulty levels. To improve it:

Include a section discussing the types of errors observed and how they were mitigated.

4. Figures and tables (e.g., Table 2 on accuracy and Fig. 5 on user interaction) are useful but lack detailed explanations in the main text. To improve it:

Enhance the discussion of figures and tables in the results section. For instance: Fig. 5 explains how specific user inputs or noisy data influenced the HEMS output.

5. The LLM-user interaction design seems technical when asking multiple questions to retrieve a single parameter. Hard-mode responses highlight user confusion, such as blending parameters like

temperature ranges. To improve it:

Simplify and streamline the question-and-answer process. For instance: Ask fewer but more targeted questions. Introduce follow-up questions automatically when user answers are ambiguous or incomplete (e.g., “Did you mean 18 or 19 degrees Celsius?”).

6. The paper emphasizes technical performance but does not address how the system would integrate with existing HEMS or smart home devices. To improve it:

Add a section discussing integration with existing HEMS platforms and practical challenges, like compatibility with diverse appliances. Include a discussion on privacy concerns and how the system ensures secure handling of user data.

Declarations

Potential competing interests: No potential competing interests to declare.