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Peer Review

Review of: "Time Is on My Side: Scene Graph Filtering for Dynamic Environment Perception in an LLM-Driven Robot"

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Summary

This paper presents a novel robot control architecture designed to enhance human-robot interaction in dynamic environments. The architecture leverages Large Language Models (LLMs) to integrate various information sources, enabling flexible and adaptive robotic behavior. The core innovation lies in the Perception Module, which generates and continuously updates a semantic scene graph using RGB-D sensor data. This detailed representation of the environment supports the Planner Module in breaking down high-level tasks into executable actions, enhancing the robot's adaptability and efficiency.

It is interesting to see the integration of LLMs to interpret complex instructions and generate actionable plans is a significant advancement, allowing for more natural and intuitive human-robot interactions. The lightweight PSGTR model used for scene graph generation offers reasonable inference times, making it suitable for real-time applications even on less powerful hardware.

However, it is noteworthy that the system's performance heavily relies on the accuracy of RGB-D sensor data and the effectiveness of the particle filter, which may be affected by sensor noise and environmental conditions. Although the PSGTR model is lightweight, the overall system still requires significant computational resources, particularly for real-time processing and continuous updates. Therefore, the actual deployment ability to the real world problem is limited unless further evidence is presented.

Declarations

Potential competing interests: No potential competing interests to declare.

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