Qeios

Peer Review

Review of: "PhysAgent: A Multi-Agent Approach to the Automated Discovery of Physical Laws"

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This manuscript presents interesting work on the use of a multi-agent approach for the discovery of physical laws. However, there are several issues with the work that the authors should address. The prompts ask the agents to forget what they already know about the underlying laws and derive them from data. It is not clear to what extent the LLM models can forget what they already know. The examples of Kepler's law and Newton's F=ma are also not convincing and are too simplistic as presented. In the case of the Newton example, I suggest the following: create numerical orbits using 1/r^2 but with a change to 1/r at larger distances to see if the agents can come up with the underlying equations. In the case of Kepler, include parabolic, hyperbolic, and circular orbits in addition to elliptical orbits and see if the model can reason its way into a reasonable solution. Also, I suggest including numerical results from the Lorenz system and seeing if the model comes up with ideas of a fixed point, bifurcation parameter, etc. This would serve as a control of how much the model is forgetting about its knowledge of chaos theory. If the model can really forget all its knowledge of chaos theory, it should not be able to come up with answers that refer to a fixed point, etc. It would be best if the authors focus on 2 or 3 solid examples and show the details (maybe include the example of rain, etc., in the appendix) rather than showing 5 examples that are not that convincing.

Declarations

Potential competing interests: No potential competing interests to declare.

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