

Sample Questions

These questions relate to the issue of modeling a student "mental state" in a user model for an Adaptive Learning Environment

1) Example of Great Question

What exactly is a "mental state"? How is it characterized, and how can we be sure when a student has moved "from one to another"? The characterization seems to imply an immediate jump from one to another one of these states (whatever they are). I have some serious trouble with this one, because I know that when I problem solve, often, the solution "dawns" on me. This suggests that mental states are not always available to me. Thus, how is the system supposed to get access to this "state" when the subject is not even aware of it? 5

Great because the student gave extensive thought to a concept that they found hard to understand, and manages to pinpoint some well-known issues in the definition of "mental state" (i.e., are these states well defined enough to be captured in a computational model and what do we actually know about how the transitions from these different states happen?)

2) Example of Good Question

The author claims that "menus do not interfere with the path of mental states ..."

This assumption may not be true. The availability heuristic from psychology suggests that the more accessible concepts are, the more likely they are to be used. Alternatively, showing too many may be overwhelming and negatively affect the usability of the system.

The question rightly points out a questionable assumption in the paper. It would have been great to see a clearer argument to illustrate its point.

3) Example of OK question

"A student's mental state is hidden from the system, and the system can only infer what the states are from observations that may be generated from these states. But the paper only addresses how to move from state to state so as to form the model. But there can also be uncertainty in the mapping of observations to states. If this is incorrect, then strategies to determine the transitions between states will also be incorrect"

OK but not great because, although the question makes a correct statement (i.e.. inferring the a mental state from external behaviors is a task permeated with uncertainty) it also includes an incorrect conclusion (i.e., that this uncertainty affects the correctness of transition strategies)

4) Example of Poor Question (it should be pretty clear why).

- **What exactly is a "mental state"?**
- **I'm particularly interested in how the authors chose the individual differences to cater the adaptations to. Differences X Y Z were taken into account, but did they also consider W,V,Q, etc and decide against these measure for some reason? [there is obviously no way to answer this question unless the info is in the paper]**