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COM316: Artificial Intelligence | Answers to Weekly Questions #5

Meeting Date & Time: 10/9/24, 8.45-9.30pm

→ ***What other types of problems can we solve using this method? In other words, the problem probably deals with a particular situation. Can we categorize what general category of problems this method can solve?***

Any problem that involves a specific rule base that won't change during run-time. Theoretically, this could solve sudoku given a strong set of rules, although it certainly would not be the most efficient (potentially better than a brute-force approach).

We can play offline Atari games as their rule base is certain before the game. Moreover, as we have a production system now, we can create generalized rules which would save us a lot of memory space.

→ ***Assuming that this solution does not give us a fully autonomous artificial mind, what is holding us back?***

We are currently still in a state of high rigidity, and we cannot evolve our program as it encounters new situations. While we are able to generate new facts, we are unable to generate (or refine) rules during the search process.

Static evaluation is when we input facts before the start of the search or in other words creating a set of facts using known values. Through static evaluation, resolving facts with continuous value facts is more accessible than before. However, it is still not able to fully work with continuous value facts. (By continuous value facts, I mean facts with non-discrete values) Detailed static evaluation can provide some interface with less discrete facts. So the limitation is still present.

We still need a rule base which might require a lot of storage in a very large and complex problem. This is an issue

→ ***Can we restate this problem and/or add more tools to gain more ground in our search for the artificial mind? What small change will force us to develop a solution that is one step closer to a fully autonomous artificial mind?***

This current rule representation only deals in absolute facts. We could improve this by allowing facts that are "partially true". For example, if we had a set of facts comparing if we are close or far away from something we

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should also be able to say that we are “somewhat” far away. Essentially, we could improve this method by implementing the functions of a fuzzy system.

As we mentioned earlier, dealing with an evolving rule base is not possible in this problem. If we have a new problem with a changing rule base we have to come up with a better solution.