Critique of Marr paper

A short summary

The paper speaks extensively about the type 1 and type 2 theories. The paper proposes that the type 1 theories are those which have a solid reasoning, or a solid mechanism or method. This way we have the complete understanding of the underlying system. The type 2 theory states otherwise that it does not have to provide a proof or a mechanism as to how the solution to a problem is found. It is much like a black box of sort with no availability of the inner mechanisms.

The critique

What would be your conclusion if you devised an AI that could solve complex problems like perception and language understanding without saying how it did it? This would surely be a matter of concern to us and I also personally feel that this would have a devastating effect.

But one thing we must observe is that with the advent of Deep Learning surely many problems have rather become a black box where we can not analyze what the system is learning, However, now we have been able to visualize and perceive what the model is learning. But what if you could not see the inside of it? Would that solution be scalable and extendable to other paradigms?

One more point that can be considered is that unlike before where we had to design an algorithm for specific performing operations, we just let the deep learning model learn by itself the algorithm involved. This way we are actually neglecting the underlying equation or the nuts and bolts of it. The best example would be that we could create a deep learning model which causes the image to blurr instead of using equations such as gaussian blurr. Here, we do not have the clarity as to what equation the deep learning model is learning but we have a complete picture of what happens in a gaussian blurr. Also, another question arises… How can we control a system that is a black box? This problem is prevalent in our present-day deep learning models where the outputs at different instances are unpredictable!!

Another topic of discussion that the author has put forward is that of mimicking and exploration. I believe that the author was referring to the rule-based systems for natural language understanding problems. With this in context, it is true that the solution becomes just that of mimicking the existing algorithm.