Critique of Tenenbaum2011

How to Grow a Mind: Statistics, Structure, and Abstraction

A short Summary

Josh in this paper has tried to promote the idea that humans and animals alike, come with a prebuilt framework with an intuition to understand the cause and effect systems. This can probably be called as common sense. For example, a person who has cough and fever is likely to have a cold while inferring that he has a lung disease. This concept is obviously probabilistic in nature. Given a similar example that the person has cough and chest pain would be more probable to infer that he might have some lung disease!

Hence, this type of inferencing within our minds can be concluded to be Bayesian inferencing rather than a statistical inference like the machine learning models.

Next question would be to answer how the data is structured or abstracted in our brain. A point that has to be noted is our innate ability to recognize patterns. It can be prominently observed in infants that given an object, they are able to infer similar objects easily. They are able to recognize these similar patterns and group the objects together. Hence, our memory can be said to be structured in a hierarchal model.

The last point to be noted is that we have an inbuilt framework already present, contradictory to what Turing says “A child can be thought of as an empty book that can be purchased in the stationery and minimal mechanisms exist upon which further learning can happen”. This is clearly not true, as even a small child is able to understand the state of a situation, the laws of physics are intuitively built into it as also the ability to approximate without much effort!

Critique

Although Josh presents a functional view of the working of our mind rather than the connectionist or neural network type of approach for inferencing, I strongly believe that it is somehow a mixture of both and many more. He exposes the holes and the huge gaps in understanding how our mind works.

References

1. https://www.youtube.com/watch?v=97MYJ7T0xXU
2. https://pdfs.semanticscholar.org/4311/c8ed28e5c5513f9c66004ce2e52d74a3b518.pdf