

# A Critique of Elephants Don't Play Chess

What is intelligent behavior? Or let us try to reiterate the core question of what we are trying to achieve... Whether all these researches carried out so far focused on mimicking human behavior and functioning or is it the question of whether we can develop a system which is aware/conscious... by means of which it can learn on its own, able to correct itself, conscious/aware of the tasks it has performed? The ability to observe the nature of things and also surroundings and infer from them (perception or induction etc.) instantaneously and the ability to reason.

We can recollect the focus of Alan Turing was in-fact the latter and even if it isn't, we can upgrade to this question at this point of time(hopefully!) to Whether the machine is actually aware of what it is doing (tasks is performing). This question sets a rather very long timeline of tasks that are to be achieved given our current state of advancements.

Although this looks out of context with respect to the paper "Elephants don't play chess", there is a need to elucidate certain aspects before we can actually analyze the paper itself. How can we describe a being that has life or is aware or conscious? I would like to place an anecdote to explain the same: Consider the most insignificant creature possible, perceivably a small bug. If we try to destroy it piece by piece or try to crush it, it will by all means try to struggle and safeguard itself until its last breath. Even the least of the being is conscious that it is going to die. It is aware that this is the end of it. With terms of mimicking such systems, arguably we might even be able to mimic such complex behaviors as expressed above. But would it be called intelligent behavior becomes a matter of question!! What we are effectively doing is - just mimicking all the functions it performs. Such a system would surely not be conscious / aware but following the commands, which can be referenced to Lady Lovelace's comments on similar lines.

It must be observed that Brooks tries to promote the same as intelligent behavior. But on the implementation level it is only following rules. The degree of freedom of the robot increases with just the increases in choices or in specific if-else constructs, which are interlinked to sensors and then actuators.

While this would be a truly broad question that this paper triggers, it also shakes the perspective of the problem of AI to be viewed as mentioned in the first question. Considering that our only objective for now is to just mimic all human behavior to the minutest level possible, I put forth some of my perspectives with regard to this paper.

The subsumption architecture or the Nouvelle AI or the physical grounding systems described in the paper present some interesting concepts with respect to building systems that exhibit behavior. It is extremely intriguing and important to notice that our complex behaviors can be broken down to simple tasks and upon combination of many such behaviors result in a rather complex behavior. The prevalent expression by the system/robot would be the dominant behaviors that subside the inhibitory ones, while the inhibitory ones still exercise a small amount of influence on the final expression by the system/robot.

The advantages of symbolic AI systems like Bayesian Learning are proving their might in Robotics and many other reasoning-oriented fields. Even the alphaGo utilized a search component which is typical of Symbolic AI systems. Moreover, Markov Decision Processes(MDP) that are incorporated for reinforcement learning can strongly be attributed to be a part of Symbolic AI (but not sure about the validity of the same).

While there were many implementations as described in the video(1) that serve complimentary in trying to achieve human behavior. We must infer that neither subsumption architecture nor pure symbolic AI are the solutions to solve the problem of AI, but a congregation of all the systems which have been found until now combined with the large missing pieces that we still need to discover is the way forward.

#### References:

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