Review of: "A Perspective for Economic and Social Unfoldings of AI"

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Potential competing interests: No potential competing interests to declare.

The terms “machine learning", and "data science” were perhaps initially buzzwords, but nowadays are the names of disciplines used even for book classification purposes.

Of course, the name “Artificial Intelligence” is a misnomer and carries a semantic weight that has not been supported by precise definitions. But this doesn’t mean that the actual research done in the field is equally vague or lacks precision.

The denomination “Artificial Inference” is too restrictive and is approximately equivalent to “automated reasoning,” which is only one of many branches of Artificial Intelligence. I don’t think it would be a good name for AI.

Regarding Machine Learning, of course, many algorithms like neuro-fuzzy systems could learn from data and could be considered in the ML field, even if they don’t usually appear in most ML books. This fact is unrelated to the validity of ML as a disciplinary area.

Further, the fact that many ML algorithms (not only including gradient-based ones) can fall into sub-optimal solutions is not a reason to dismiss them as useless. You have to be aware of the limitations of each and every ML algorithm there is in order to apply them only when they are fit to the problem at hand.

The discussion of the “deep learning” term is somewhat misplaced because the word “learning” refers to the architecture of the neural net, not to the learning itself. Hence, “shallow learning” is nonsense because what would be shallow is the net, not the learning. It follows that the discussion after that (last paragraph on page 3) is pointless.

What I see in several of the previous discussions about terms is that you are taking them at face value instead of taking them just as arbitrary terms that have been adopted for historical reasons. I’d wish the AI terms had been better crafted, but the discipline is young and not yet very well structured.

Regarding the question, “Is it really (scientifically) necessary to invent new names for old things […]” you should agree that there weren’t old names for technologies like “neural networks” or “expert systems” inside the AI area. The whole area is young, and they had to come up with names, not always with the greatest accuracy.

Please try to use references as text decoration and not as substantives. For instance, on page 3 you write “In [8], for instance” taking [8] as the substantive in a sentence. The right way to reference works is such that if references are completely removed, the text would still make sense, which do not happen in “In, for instance.” In this example, we could

use a phrase like “In the book by Yan [8]…”

Nevertheless I agree on the call for more precise concepts and definitions you make on page 4.

I have to say that the whole section 2 doesn’t deal with economic and social issues, which are supposed to be the main topic of this paper.

Very good point about the need for education. Retraining is harder because sometimes the new jobs cannot be tackled by the displaced people, and even training them is a big challenge.

I didn’t get the idea of the paragraph before section 3.3. Try to rephrase…

Do you have a reference about “real time fuzzy control systems”?

I don’t share your good opinion about private investment, like in the phrase, “In practical terms, venture capital funds have worked well over the years.” Short-term goals and maximum profit-seeking in venture capital foster high risk-taking and result in high rates of failures in startups.

So you disagree with the term “Deep Learning” but use “deep science” on page 7?

Perhaps a mention of the fields “fuzzy logic” and “global optimization” could be made in the title of the paper.

Good discussion about the claims that ML systems are error-free, which doesn’t happen in real life.

Please avoid the use of all-caps in words like NATURAL, HUMAN, GLOBAL, etc.

I don’t agree that nature uses global optimization. In particular, in the natural evolution process fueled by the survival of the fittest principle you mention, there are local optima that result in high inefficiencies, as pointed out by Richard Dawkins in his book “The Greatest Show on Earth” (highly recommended).

In conclusion, though a number of important topics are raised, like the relevance of education and the support of science, the social analysis of the consequences of AI is a bit shallow. In particular, there is no underlying social theory in the analysis, and it lacks the examination of negative externalities related to AI development and deployment in the age of monopolist capitalism.