What is behind the "I" in the AI?
Common delusions and misconceptions demystification.

Emanuel Diamant, emanl.245@gmail.com

Doing science is like to play with a Russian Matryoshka doll – a set of wooden figures with a quirk – you open the first one (the topmost) and you reveal inside another one, a bit smaller item. Then, if you open it, the story repeats itself again and again. This is the case of "Intelligence" ("I") in the Artificial Intelligence (AI) definition story.

The notion of AI was launched at the Dartmouth meeting in 1956. The term "Intelligence" was not defined at that moment. That caused disorder and uncertainty at all further AI development stages. For instance, human intelligence was thought to be the only evidence of intelligence. Human brain was considered as intelligence producer. Because computational paradigm was the dominating paradigm of that time, human brain was considered to be a computing device, and intelligence was considered to be computational. To facilitate brain computing modeling Artificial Neural Networks (ANNs) were devised as a set of tightly interconnected simple computational units resembling the biological neural nets in the brain.

These mentioned above indefinable assumptions were the load bearing pillars of AI's research and development for almost a half of the century. But in recent decades this state of affairs has been changed significantly: the computational (that is, data-processing-based) paradigm has been gradually replaced with the cognitive (that is, information-processing-based) paradigm.

The consequences of this paradigm shift are tremendous. However, most of the AI community does not accept their presence and does not recognize their importance. The reason – people do not know what information is and what are the rules (the ways) of handling it properly. That is exactly the point, where the next doll in the set comes under scrutiny. A consensus definition of information does not exist. Therefore, to proceed with disentangling the nested intelligence definitions my readers have to be acquainted with my view on the subject. But space limits do not allow me to expose here all my arguments. Interested readers are advised to go and to look at my Research Gate page: https://www.researchgate.net/profile/Emanuel_Diamant. Meanwhile, we will proceed with inspection of the "forthcoming" dolls' content, which looks more like a subject list of an article or a stockpile of ready-to-use slogans:

Information is a linguistic description of structures observable in a given data set.

Two types of structures must then be distinguished – primary, or physical, data structures and secondary, or semantic, data structures. Appropriately, two types of information must be distinguished – Physical Information and Semantic Information.

Both are language-based descriptions; however, physical information is best described in a mathematical language, while semantic information can be described only by means of natural (human) language.

What follows is that information has to be seen as a text piece, a story, a narrative. Evidently, that is the form in which information is stored, processed, exchanged and distributed between information owners and users.

Contemporary research into biological intelligence reveals that intelligence is not an exceptionally human trait, but it is common to all living beings in existence. Attempts to recreate from scratch the extreme complexity of human intelligence are wrong and useless, and must be evaded.

Intelligence defined as an ability to process information is disrupting the basic principles of today's AI research and development. DLNNs, RNNs, CNNs, and all other heroes of today's AI renaissance, are simply latest modifications of the classical ANN prototype, and as such could not be used anymore as means of AI development and modeling. Evidence from the nature that confirms that intelligence is inherent even to brainless and nervous-system-less creatures must be incorporated into our attempts to reconstruct intelligence as an artificial feature of our everyday usage. Otherwise, we are doomed to continue to invent and improve computational techniques and abilities that facilitate our misunderstood human intelligence modeling principles. Scrutinizing what is behind the inner levels of the notion of "Intelligence" is not a matter of scholastic curiosity. It is an urgent demand to prevent improper use of today's AI inspired delusions and misconceptions.