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Peer Review

Review of: "Intelligence: The Quest for a Universal Assessment Framework"

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This paper offers a comprehensive and in-depth exploration of intelligence. It advantageously covers a wide range of intelligence-related topics, including human, non-human (such as animal and artificial) intelligence, as well as embodied and distributed intelligence. It delves into the complex nature of intelligence, discussing its various definitions, types, and assessment methods. By highlighting the challenges in measuring intelligence across different entities, it provides a realistic view of the field. Moreover, it proposes potential ways to construct a universal intelligence assessment framework, presenting both minimalist and complementary scale-based approaches. Overall, it serves as a valuable resource for understanding the multi-faceted concept of intelligence and the efforts towards a unified assessment system. **However, there are still some key issues in this paper that need improvement and revision.**

1. The paper attempts to define intelligence but leaves the concept somewhat ambiguous. For example, there seems to be overlap in the categorization of intelligence types. The discussion on general intelligence and its relationship with other types of intelligence (e.g., emotional intelligence) is not well-differentiated. It is unclear whether these are truly distinct forms or subsets of a broader concept.

2. The paper presents a wide range of intelligence assessment tools for humans, but it highlights significant inconsistencies between different tests. For example, IQ tests vary in reliability, internal consistency, and the cognitive functions they measure. This lack of standardization undermines the validity of using these tests for a universal assessment framework.

3. When it comes to assessing non-human intelligence, the article notes that human-oriented tests are not easily applicable to animals or artificial intelligence. However, it does not fully explore

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alternative, more appropriate assessment methods in depth. There is a need to develop or suggest new assessment techniques that can overcome the limitations of existing methods.

4. Lack of Unified Theory: There are multiple theoretical models mentioned, such as Guilford's and Gardner's, but the article does not effectively integrate them into a single, coherent theoretical framework. This makes it challenging for readers to understand how these different models fit together and contribute to the overall understanding of intelligence.

5. The connections between the neurophysiological basis of intelligence, different intelligence types, and assessment methods are not fully developed. For example, while the article mentions the role of brain structures in intelligence, it does not clearly show how these relate to specific types of intelligence and how they can be incorporated into assessment procedures.

6. The comparison between artificial intelligence and human intelligence is somewhat one-sided. The article focuses on the differences in task-solving abilities but does not fully explore the potential for similarities in cognitive processes. A more balanced comparison could provide a deeper understanding of both forms of intelligence.

Declarations

Potential competing interests: No potential competing interests to declare.