



TITLE: Quest for I (Intelligence) in AI (Artificial Intelligence): A Non-Elusive Attempt

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ABSTRACT

This contribution essentially makes a non-elusive attempt in quest of 'I' (Intelligence) in 'AI' (Artificial Intelligence). In the year 1950, Alan Turing proposed "the imitation game" which was a gaming problem to make a very fundamental question — "can a machine think?". The said article of Turing did not provide any tool to measure intelligence but produced a philosophical argument on the issue of intelligence. In 1950, Claude Shannon published a landmark paper on computer chess and rang the bell of the computer era. Over the past decades, there have been huge attempts to define and measure intelligence across the fields of cognitive psychology and AI. We critically appreciate these definitions and evaluation approaches in quest of intelligence, which can mimic the cognitive abilities of human intelligence. We arrive at the Cattell-Horn-Carroll (C-H-C) concept, which is a three-stratum theory for intelligence. The C-H-C theory of intelligence can be crudely approximated by deep meta-learning approach to integrate the representation power of deep learning into meta-learning.

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Thus, we can combine crystallized intelligence with fluid intelligence, as they complement each other for robust learning, reasoning, and problem-solving in a generalized setup which can be a benchmark for flexible AI and eventually general AI. In far-reaching future to search for humanlike intelligence in general AI, we may explore neuromorphic computing which is essentially based on biological neurons.

Keywords: general AI, crystallized intelligence, fluid intelligence, deep learning, meta learning, deep-meta learning, neuromorphic computing

BIOGRAPHY

Dr. Kumar S Ray is a retired professor from Indian Statistical Institute, Kolkata- 700108 India. At present he is a Distinguished Professor of GLA University, Mathura (India). He has over 100 publications in the broad area of computer science. His Publication h-index is 18. He has been serving as an editorial board member of several reputed journals.



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