

ON THE TURING COMPLETENESS OF MODERN NEURAL NETWORK ARCHITECTURES

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Abstract

Alternatives to recurrent neural networks, in particular, architectures based on the attention mechanism, have been gaining momentum for processing input sequences. In spite of their relevance, the computational properties of these alternatives have not yet been fully explored. We study the computational power of a paradigmatic architecture of this kind, namely, Google's Transformer. We show the model to be Turing complete exclusively based on their capacity to compute and access internal dense representations of the data. Our study also reveals some minimal sets of elements needed to obtain this completeness result.

SEMINARIO

25 DE SEPTIEMBRE
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