

Kolmogorov Complexity and The Digital Universe

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Next year Kolmogorov complexity will have 50th anniversary. Since its origin mankind gave birth to a new universe, the Digital Universe. The majority of our data and information is inside it somewhere and in digital form of some kind. It is huge. We know that a few zettabyte of information is collected in the Digital Universe. The Digital Universe contains only the substitutions, or encodings of information, independently of whatever information means. Inside the Digital Universe the physical processes are either transformations of signals from one form to other one or they are materialized computations. So Digital Universe belongs to the territory of algorithmic information theory. The measure of the algorithmic information quantity, the Kolmogorov entropy is not good for the direct investigation of the Digital Universe. We explain that it is not the measure itself; but method of the selection and use of a Universal Reference Machine is important. We can use it as a measurement tool in finding approximation in quantitative analyses of the behavior of the Digital Universe.

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