

Chapter 2

Studying the Big Data Paradigm in Dynamics of Its Advance

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ABSTRACT

The study of the big data subject matter in its advance already has its own history. Assuming as a basis the content analysis of article abstracts on big data, using e-library stocks of Association for Computing Machinery (ACM) and Institute of Electrical and Electronics Engineers (IEEE), one succeeds to monitor the life cycle phases of the big data paradigm and distinguish the stages of developing programs and algorithms from the technology update, including applications and their advanced renewals. In order to carry out the analysis, it is proposed to approximate the curves of cumulative frequencies of words, obtained from the corpus of texts by means of cubic parabolas, their parameters being in good concordance with ones of logistic curves.

INTRODUCTION

When analyzing an advance of studies, it is important to monitor the life cycle of a subject matter in the close field. In our case for these aims it was required to clarify the phase of life cycle, where the Big Data paradigm is situated.

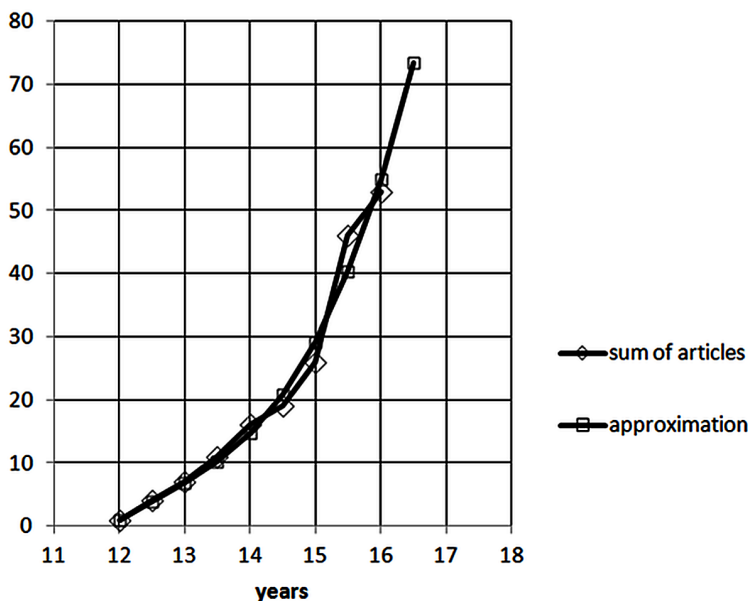
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As well known, a quiverish scientific idea on the science front line becomes a paradigm in that moment or period of time, when resources of science and technology are at the level high enough to advance the idea as long as the self-organization of scientific community generates necessarily some critical host of persons adhering this idea. Right after the moment mentioned articles of *normal science* appear, they pick up and advance the idea. If the critical host of adherents is not reached or if the idea is scarified by opponents and rejected at the popularity growth stage, in these conditions no new paradigm arises.

Life Cycle Model for a Topic in Close Scientific Field

Seemingly, any paradigm should have its own empiric model too. When considering the life cycle of a project or an enterprise, their cycle stages are determined and all the cycle is described using some parameter A, its model being, in its turn, the S-like curve of one from two kinds: a curve of intensity, increasing from zero and then diminishing as far as zero or a curve of cumulative frequency for A parameter. For an enterprise start and finish dates of its life cycle may be fixed, so instead of logistic curve the model is more suitable in the form of increasing part of cubic parabola between left minimum and right maximum (see Figure 1).

Figure 1. Cubic parabola P and logistic curve L as models of cumulative frequencies curve, when an inflection point of P is congruent with the same one of L and for both curves slopes of a tangent are the same too



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