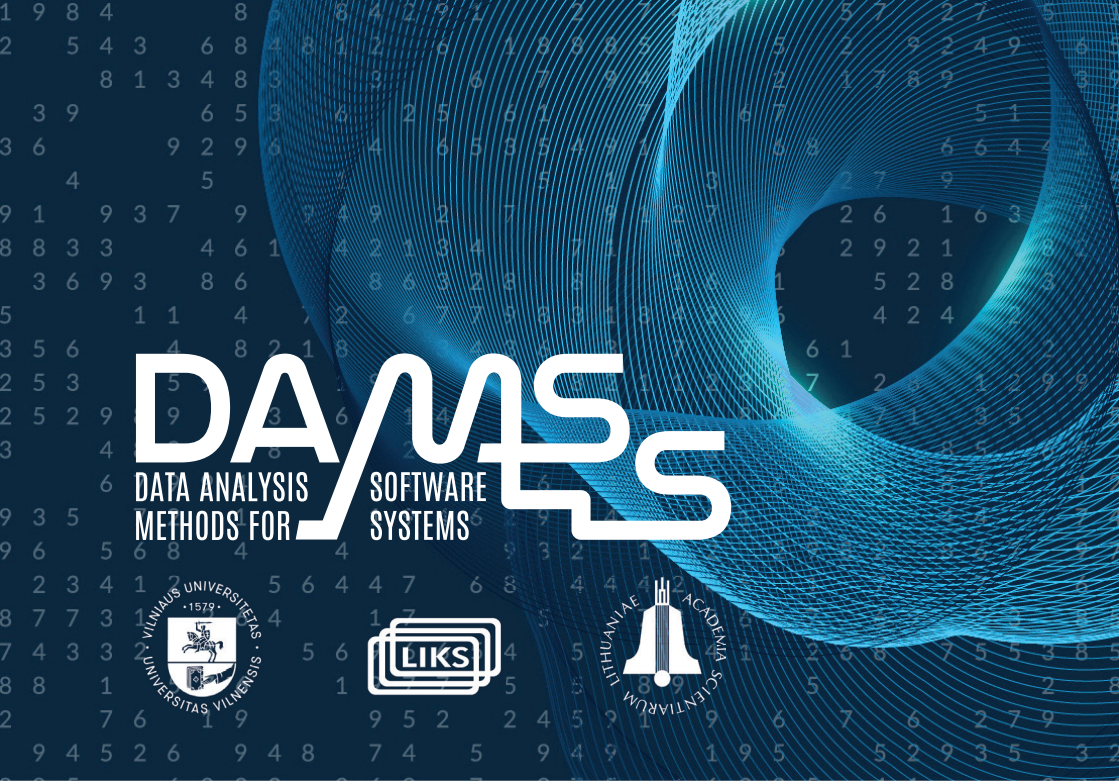

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Analysis of the Concept of Reasoning

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The concept of „reasoning" dates back over 2500 years, beginning with the ancient Greeks, who studied reasoning processes; Aristotle introduced the term „logos," meaning reason, argument, and logic (Anton, 1997). The Romans followed with „ratiocinatio," signifying reasoning or conclusions. In the Middle Ages, Thomas Aquinas used „disputatio" and „argumentatio" (Hoenen, 1997) to discuss reasoning, which Renaissance and Enlightenment thinkers like Descartes, Locke, and Hume further explored (Descartes, 2019; Locke, 1847; Hume, 2000). In the twentieth century, Bertrand Russell and Ludwig Wittgenstein formalized logic (Russell & Whitehead, 1910-1913; Wittgenstein, 2023) as the basis for reasoning structures, while Alan Turing laid the groundwork for computing machines capable of reasoning, establishing reasoning as a core area in artificial intelligence research. In the 21st century, this concept is now used in areas such as artificial intelligence, machine learning, natural language processing, task planning, and more. It is also applied in cognitive sciences and neuropsychology. The concept of reasoning has become interdisciplinary and is used in various fields, from academic disciplines such as mathematics and logic to professional environments where critical thinking and innovative problem-solving are required. This research examines the concept of reasoning as a multifaceted cognitive structure, with particular emphasis on abstract reasoning as a critical cognitive skill that enables individuals and artificial systems to recognize patterns, solve complex problems, and understand complex concepts without relying on concrete experiences. In our research, we conducted a bibliometric study to classify and summarise how the concept of reasoning has transformed over the past millennia, how it is currently applied, and its contribution to science, we used for this advanced bibliometric analysis an extensive Web of Science dataset (Zupic & Čater, 2015). This work

contributes to a broader and comprehensive study aimed at providing a high-level conceptual overview of the concept of reasoning, encompassing various perspectives, methodologies, and innovative approaches.

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