COLLOBORATIVE DISCUSSION 1

Initial Post

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Knowledge Representation (KR) is not a recent phenomenon. Although it has existed for centuries, it became more prominent in the last few decades due to advancements in computing and technology (Sowa, 2000; Brachman & Levesque, 2004).

Before computers existed, thinkers and academics searched for ways to structure and present information systematically. For example, in the 3rd century AD, the Greek philosopher Porphyry developed a hierarchical diagram known as the Porphyrian Tree to classify Aristotle's categories. This early attempt at a semantic network was designed to show interrelations between concepts in an orderly fashion (Smith, 1985; Russell & Norvig, 2010).

During the Middle Ages, knowledge was represented by different schematic tools. Many manuscripts of that time included elaborate diagrams and flowcharts that expressed specific theological and philosophical ideas. Thus, they served as visual aids for comprehending complicated ideas (Sowa, 2000).

Even though KR has historical precedents, the evolution of computing technology has brought KR into the limelight. The necessity of enabling machines to process, reason, and comprehend human knowledge prompted the development of formalised representation systems (Lenat & Guha, 1990; Davis & Marcus, 2015). This led to the creation of different KR frameworks, such as semantic networks, frames, and ontologies, designed to facilitate artificial intelligence and machine learning applications (Russell & Norvig, 2010).

Reasoning, by its very nature, is inseparable from KR. In artificial intelligence, reasoning is deriving conclusions from known information or facts. KR provides a structured framework within which this information is organised, enabling reasoning to function effectively (Brachman & Levesque, 2004). Without reasoning capabilities, KR remains static and unable to derive new insights or make decisions, limiting its usefulness (Davis & Marcus, 2015).

While computing technology has considerably enhanced the formal study and application of KR, the concept of knowledge representation is deeply rooted in human history. The inherent synergy between KR and reasoning transforms passive information repositories into dynamic systems capable of intelligent behaviour (Lenat & Guha, 1990).

References

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