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Auto-Advisor

Framework on Knowledge Based Decision Analysis for A Long-Term Investment

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Abstract

Decision making is a cognitive process that remains a vital part at the very core of the evolutionary process in every species. We as humans, our capacity to make free choices, counter the evolutionary process at times, remains a remarkable distinction which separates us from the rest of the species. But the question remains, what drives our ability to make decisions freely and is this process free of influence from other cognitive factors? The traditional view of decision making is based on intuition, tradition and simple past analysis are not the only factors in the process.

Most of the critical decisions made by human needs skillful negotiations in its aftermath. Since most decisions requires an accord of several dimensions and factors, it is improbable that humans could evaluate all the elements involved at optimal level in this cognitive process to arrive at the best course of action. According to the author of this research, cognitive process includes key elements such as attention, approach, argument and assessment also known as 4A's of cognitive process.

To address this problem of minimizing human error in decision making, this research approach creates a link between semantic knowledge and machine learning. The ontology is constructed by collecting an existing ontology schema associated with specifications of a vehicle, as the use case is based on automobiles. The key contribution in this decision-making procedure is of two types. First, to derive the best decision using multiple dimensions. Second, this platform will generate a justification to justify the decision made. This platform is named as **Auto-Advisor** and is a unique approach in the decision support system domain.

The overall analysis of auto-advisor from all the experts were positive with suggestions for future enhancements for this system. This framework could decide feasibility for any long-term investment.

Keywords: Supervised learning by classification, Semantics, Ontology engineering, Machine Learning, Decision support systems, Nearest neighbor algorithms