Using KOS for Artificial Intelligence Applications

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There are many algorithms, which are classified as Artificial Intelligence (AI). Most AI systems use several. Some are based on defined parameters and others on derived variables such as inference/statistical approaches. The algorithms and theories used to support AI seem nearly endless.

This paper reviews the current market conditions for AI, economic considerations, and technical barriers. Insuring replicable, reproducible accuracy in AI support systems especially for decision support systems is crucial. Our findings are that KOS driven AI is less expensive to implement and more accurate, while solving the "explain-ability" dilemma.

Focusing more narrowly, machine learning and AI approaches to automatic indexing and other aspects of content enrichment have tremendous potential, but there are significant barriers to successful implementations. Cost can be a significant barrier, which has slowed widespread adoption.

There are a lot of risks in implementation of AI including unethical use … insufficient learning … incomplete data … inaccurate data … unsecured data … regulatory noncompliance … unrepresentative data … biased data and/or models … discriminatory outcomes … model instability … performance degradation … implementation errors … poor design … insufficient training … technology malfunction … performance issues … human machine interface failures … over fitting … BUT plenty of upside, too!

Significant costs are involved in just the training and maintaining systems that chronically under perform and fail to scale. Cost and performance data will be characterized and presented. Machine learning and artificial intelligence projects are not for the faint of heart, nor for those with small budgets. Key cost elements are identified along with approaches to estimating costs based on actual and reported cases. The good news: cost and technical barriers are falling.