



“Knowledge Engineering” and the Emerging Technologies of the Next Decade

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"Where is the wisdom we have lost in knowledge?
Where is the knowledge that we have lost in information?"

[T.S. Eliot](#), The Rock (1934)

Overview

Between Mathematics, Computer Science, Software Engineering, Electrical Engineering, and Statistics, is emerging an area of effort concerned, not just with using data or information gathered slowly over months or years, but with its real-time acquisition, interpretation and analysis, and its real-time use in appropriate decision-making, automatic adjustment, and intelligent response.

These advances are being fueled by the latest developments in mathematics, statistics, and computer science, and augmented by sensors and systems, massive databases, small, energy efficient microprocessors, remote communications, and geographical awareness. For a team capable of bridging the disciplines involved, the potential for application is truly unlimited.



This emerging area can perhaps be called Knowledge Engineering, or the use of engineering methodologies to dramatically accelerate the rate at which knowledge is obtained, understood, distributed, and put to use.

The following figures illustrate the circle of disciplines whose techniques are contributing to Knowledge Engineering and its various applications.

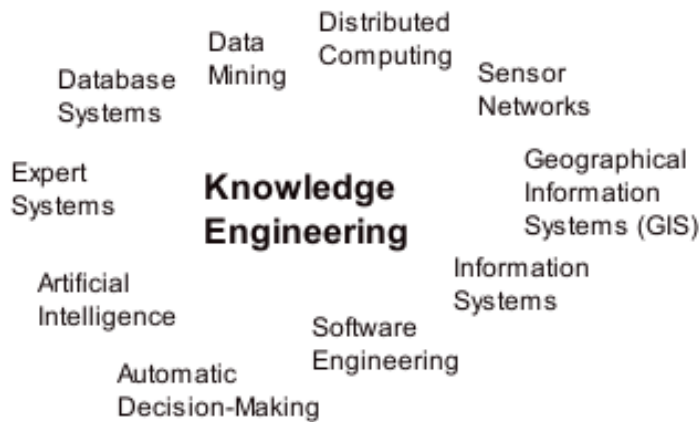
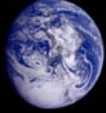


Figure 1. Those areas that most closely border the core area of Knowledge Engineering.



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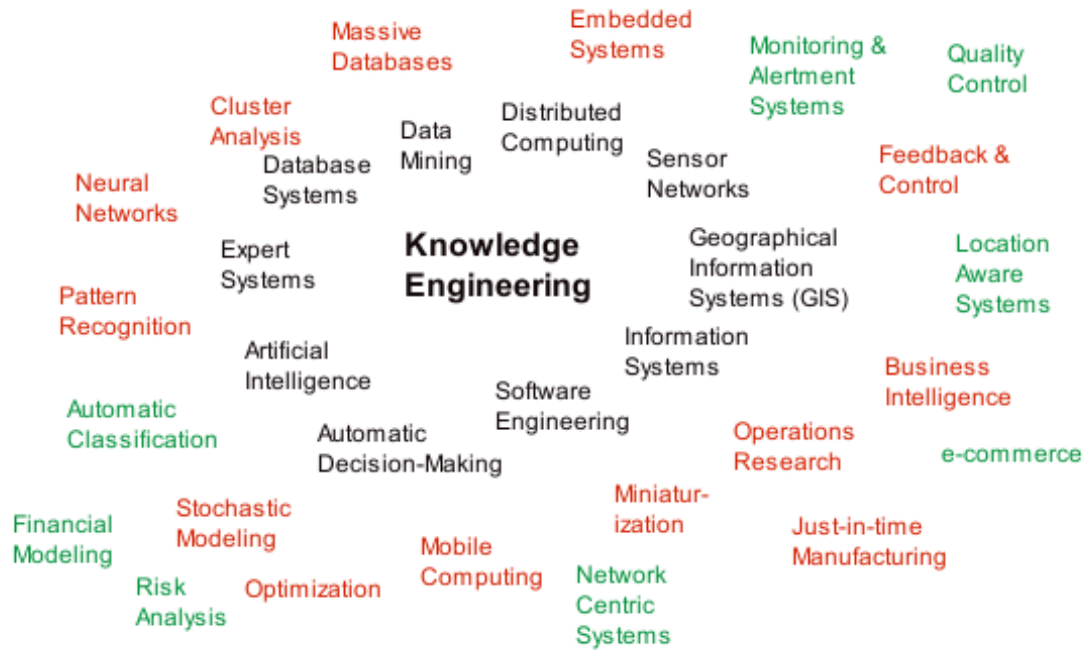


Figure 2. Expanding outward, one intersects areas combining major science and technology disciplines.



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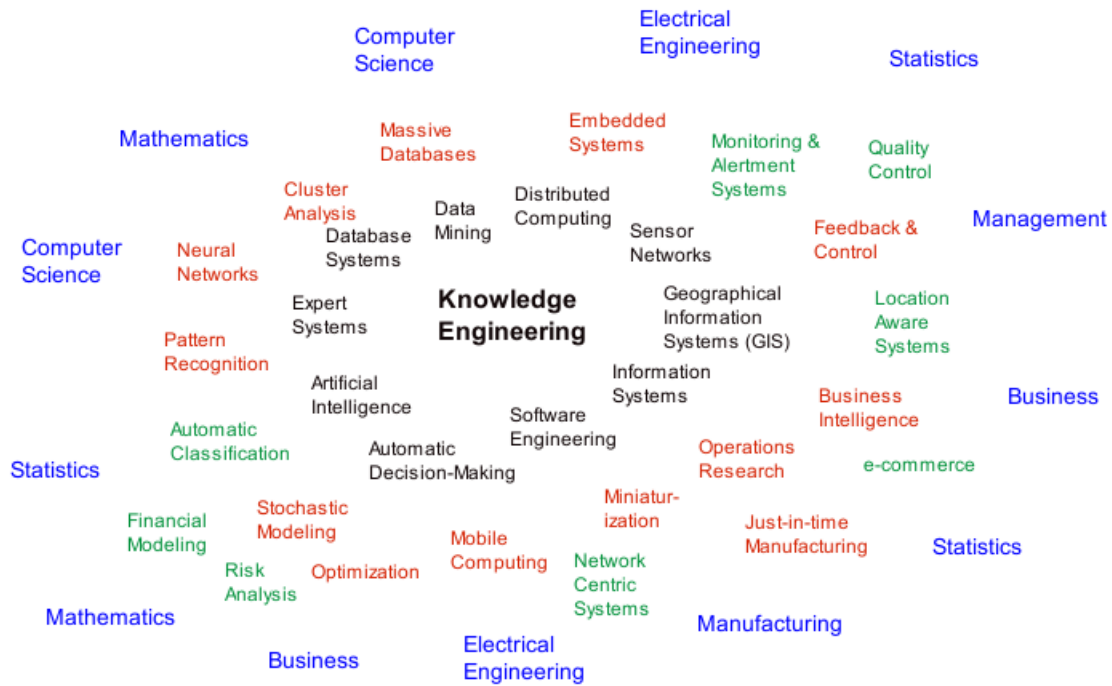


Figure 3. The full scope of the situation: traditional science and technology disciplines are in the outermost ring, often isolated from each other. The result of their *integration* is what is driving the areas out of which a large portion of technology in the coming decade is likely to appear.