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Cognitive Architectures in Man and Machine: Implications for learning and Education

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Engineering is the Future

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Cognitive Architectures in Man and Machine: Implications for Learning and Education

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(Lecture)

Since the invention of the term “cognitive architecture” by Allen Newel (1971), based on the computer architecture (Brooks, 1962), there has been a plenty of efforts to come up with the solutions to overcome obstacles toward a better understanding of human and machine learning and cognition (e.g., Anderson, 2007). The architecture of buildings and to some extends, computers, is usually used to mean the product, not the activity, of design. However, a “cognitive architecture” is the features of the structure of the brain at an abstract level that explains how it achieves the function of the mind (Anderson, 2007). In the classic information-processing in cognitive science (e.g., Newel and Simon, 1967) and psychology (e.g., Pylyshyn, 1984), the brain was ignored, though Newel appreciated the question, how can the human mind occur in the physical universe? Here, we elaborate a little bit on this issue based on the recent development in cognitive and computational sciences to see how much there have been successes in achieving this goal, i.e., understanding and implementing a brain-based computational model of the mind. Then, we are going to discuss its implications for Learning and Education in the area of science and engineering.



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