Modeling Working Memory in a Unified Architecture: An ACT-R Perspective

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Five Central Features of the Model

We describe a model of working memory that is developed within the ACT-R cognitive architecture. Some of its main features are derived from the basic features of ACT-R:

(1) Processing depends on the current goal of the system, and

(2) The accessibility of declarative and procedural knowledge varies with experience.

In addition, the following features are important to working memory in particular:

(3) There is a limited attentional resource, focused on the current goal, that increases the accessibility of goal-relevant knowledge relative to other knowledge,

(4) In more complex and memory-demanding tasks, this limited resource is spread more thinly thus impairing retrieval of goal-relevant items, and

(5) The "capacity" of this attentional resource may vary from person to person, influencing the ability to access goal-relevant information across domains.