

ACT-R Since 2001

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10 Years Ago

- Post Graduate Summer School at Coolfont
- Introduced ACT-R 5.0
 - Buffers
 - Request & harvest for retrievals
 - No goal stack
 - Integrate R/PM
 - Production compilation

Today

- What has and hasn't changed since then

Not here to announce ACT-R 7.0!

Things that haven't changed

- Declarative memory and activations
- Central production system
 - Including production compilation
- Perceptual and motor capabilities

ACT-R 5 proposals that didn't work out

- Competitive latency equation
- Noisy thresholds

Things that are gone now

- PG-C
- Learning of associative strengths

$$R_{ji} = \frac{assoc * R_{ji}^* + F(C_j)E_{ji}}{assoc + F(C_j)}$$

$$S_{ji} = \ln(R_{ji})$$

What is new

- Software and resources
- Included architectural components
- Optional architectural components
- Other things

Software and Resources

- ACT-R 6.0
 - New implementation and new author
- New ACT-R Environment GUI
- Standalone applications
- Reorganization of the tutorial materials
- Unified reference manual and other docs

Procedural Module changes

- Utility learning equation

$$U_i(n) = U_i(n-1) + \alpha[R_i(n) - U_i(n-1)]$$

- Dynamic pattern matching
- Procedural partial matching

Architectural additions

- Imaginal module
 - Split goal information
- Temporal module
 - Time estimation

Optional components

- Blending
 - Retrieval of aggregated results
- EMMA
 - Eye movement and movement of attention
- Spacing effect modification
 - Changes base-level to better account for intervals
- Threaded Cognition
 - Multiple concurrent goals
- Base-level inhibition
 - Suppress recently retrieved items

Other things

- fMRI related research
 - BOLD prediction mechanisms built in
- Becoming less centralized
 - More self-supported labs
 - Multiple alternate implementations
 - Spring School and Workshop in Netherlands

Summary

- Primarily a stable system
- Decade of gradual changes