

Soar 9.4

Mazin Assanie
University of Michigan
32nd Soar Workshop
mazina@umich.edu



Overview

- Summary of Talk
 - New features and changes
 - Code clean-up
 - Proposal for new 9.4 simplified command interface

New Features

- Three significant expansions of this learning mechanism
 - General variablization
 - Complex tests in conditions
 - Search control knowledge incorporated into chunks
 - *All of these are off by default*
- Soar Visual System (Joseph Xu, upcoming talk)
 - Does not affect you if you don't use it

Episodic and Semantic Memory Changes

- New underlying database schema
 - More consistent and understandable.
 - Eliminated some special cases which might make it easier to use with other databases or in third-party tools.
- Transferred some implementation improvements from semantic to episodic memory

Episodic and Semantic Memory Changes

- New option to either append to or overwrite a database
- Can now switch database/memory/file settings at any time and can continue running with new settings without restarting

Implications: Episodic and Semantic Memory Changes

- Episodic memory defaults to append mode off
 - Make sure to turn off if you want to build up a database across multiple runs.
- Semantic memory defaults to append mode on
 - Same behavior as before
- Database/Path settings are now decoupled
 - Make sure to set *both* the path and mode to “file” if you want to use an on-disk database.

Code Clean-Up

- Bug fixes
- Use consistent internal storage of parameters throughout kernel
- Removal of obsolete code
- Consolidation of all trace messages through central mechanism
- Simplify local/XML output dichotomy
- Standardize some coding conventions

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User Interface Proposal

add-wme	help	predict	sp
alias	indifferent-selection	preferences	srand
allocate	init-soar	print	stats
capture-input	internal-symbols	production-find	stop-soar
cd	learn	pushd	time
chunk-name-format	load-library	pwatch	timers
clog	ls	pwd	unalias
command-to-file	matches	rand	verbose
default-wme-depth	max-chunks	remove-wme	version
dirs	max-dc-time	replay-input	waitsnc
echo	max-elaborations	rete-net	warnings
echo-commands	max-goal-depth	rl	watch
edit-production	max-memory-usage	run	watch-wmes
epmem	max-nil-output-cycles	save-backtraces	wma
excise	memories	select	
explain-backtraces	multi-attributes	set-library-location	
firing-counts	numeric-indifferent-mode	set-stop-phase	
gds-print	o-support-mode	smem	
gp	popd	soarnews	
gp-max	port	source	

UI Changes: Motivation

- Commands grew organically and in very different, non-standard ways.
 - Multiple developers
 - Multiple styles/conventions, etc.
- Improve issues that resulted from this
 - Spring cleaning

UI Changes: Caveats

- Many of these proposals are subjective. We appreciate feedback.
- We will maintain as much backward compatibility as possible using aliases to ease transition.
- Not all of these will necessarily occur.
- May be released in stages.

Main Issues

1. Inconsistency
 - Conventions
 - Output
2. Overwhelming number of commands for new users (74)
 - Especially since there is no organization
 - Many veteran Soar users do not know about all the commands or settings
3. Could be easier to understand
 - Some names can be more intuitive
 - Dense, often very long help pages

General Proposal

1. Remove obsolete commands/settings
2. Combine related commands and consolidate parameters
 - Reduces number of commands
 - Hierarchical and categorized structure more understandable
3. Simplify more complex commands
4. Rename some commands/parameters
5. Standardize command feedback and output
6. Add easy new functionality

1. Remove Obsolete Commands

1. O-SUPPORT-MODE
2. VERBOSE
3. SOARNEWS
4. EDIT-PRODUCTION

2. Combine Related Commands

- SET
 - Unified command for all settings
 - With no parameter, shows a unified and categorized list of all modifiable settings in Soar
 - Reduces number of commands by 17
 - For example:
 - New: set stop-phase after
 - *Old: set-stop-phase --after*

2. Combine Related Commands

- More examples:
 - PRINT [explain | gds | internal-symbols | port]
 - WME [add | remove]
 - OPERATOR [select | predict]
 - SAVE/LOAD [input | library | rete]
 - ALIAS , [<name> <alias> | -delete <name>]
 - TRACE-FILTER [wme | production]

3. Restructure WATCH

- Rename it TRACE
 - More accurate description.
- Improve and categorize names
- Split off WATCH 0-5 into a separate command:
 - *TRACE-LEVEL 0-5*

3. Restructure Print

- Simplify PRINT command by splitting into two
 - *FIND*: does all printing based on matched patterns
 - Symbols, WMEs and productions
 - *PRINT*: does only printing for fixed items
 - symbols by id, wme's by timetag, productions by name, fixed lists (like a production type, gds, internal-symbols, etc.), uneditable variables (like port)

4. Rename Commands and Settings

- Eliminate "--" convention. Everything can be "-".
- Examples:
 - CHUNKING (LEARN)
 - STOP (STOP-SOAR)
 - INIT (INIT-SOAR)
 - MAX-GP (GP-MAX)
 - LOG (CLOG)
 - STOP-PHASE (SET-STOP-PHASE)
 - PRINT-DEPTH-DEFAULT (DEFAULT-WME-DEPTH)
 - RANDOM-SEED (SRAND)
 - FORGETTING (APOPTOSIS)

5. Clean Up Output and Make Consistent

- Make output and settings display consistent across all commands
- Make sure all commands have some feedback
- Add module name prefix to trace messages
- Make help and individual menus categorized

Clean Up Output and Make Consistent

```

Sourcing epmem-interval-test.soar.
EpMem| learning = on
SMem| learning = on
EpMem| exclusions = io
EpMem| exclusions = reward-link
EpMem| exclusions = superstate
EpMem| exclusions = type
EpMem| exclusions = wmg
EpMem| optimization = safety
EpMem| lazy-commit = off
EpMem| database = file
EpMem| path = /Users/mazzin/Soar/Agent
*****
Total: 5 productions sourced. 1 produ
Sourcing aliases.soar.
Total: 0 productions sourced.

```

```

% epmem
=====
s <r1> <r2>
EpMem| learning = on
2)
----- Encoding -----
phase: output
trigger: dc
force: off
exclusions: io, type, epmem, smem
----- Storage -----
database: file
append-database: off
path:
lazy-commit: off
----- Retrieval -----
balance: 1
graph-match: on
graph-match-ordering: undefined
----- Performance -----
page-size: 8k
cache-size: 10000
optimization: safety
timers: off
----- Experimental -----
merge: none
%

```

6. Add Easy New Functionality

- Brief version of the man/help command:
 - For example:
 - ? [command] or **help** [command]
 - ?? [command] or **help -verbose** [command]
- Three sub-commands for the new SAVE/LOAD:
 - SETTINGS
 - CHUNKS
 - ALIASES

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Soar Execution**Modules****Debugging****Performance****File System****Command Line**

sp

epmem

find

allocate

cd

alias

gp

chunking

firing-counts

optimize

dirs

log

run

rl

matches

stats

ls

command-to-file

stop

smem

preferences

time

popd

echo

init

wma

print

pushd

help

wme

trace

pwd

rand

excise

trace-level

source

operator

trace-filter

version

set

save

load