Improving Soar Debugging

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Making Soar Debugging Easier

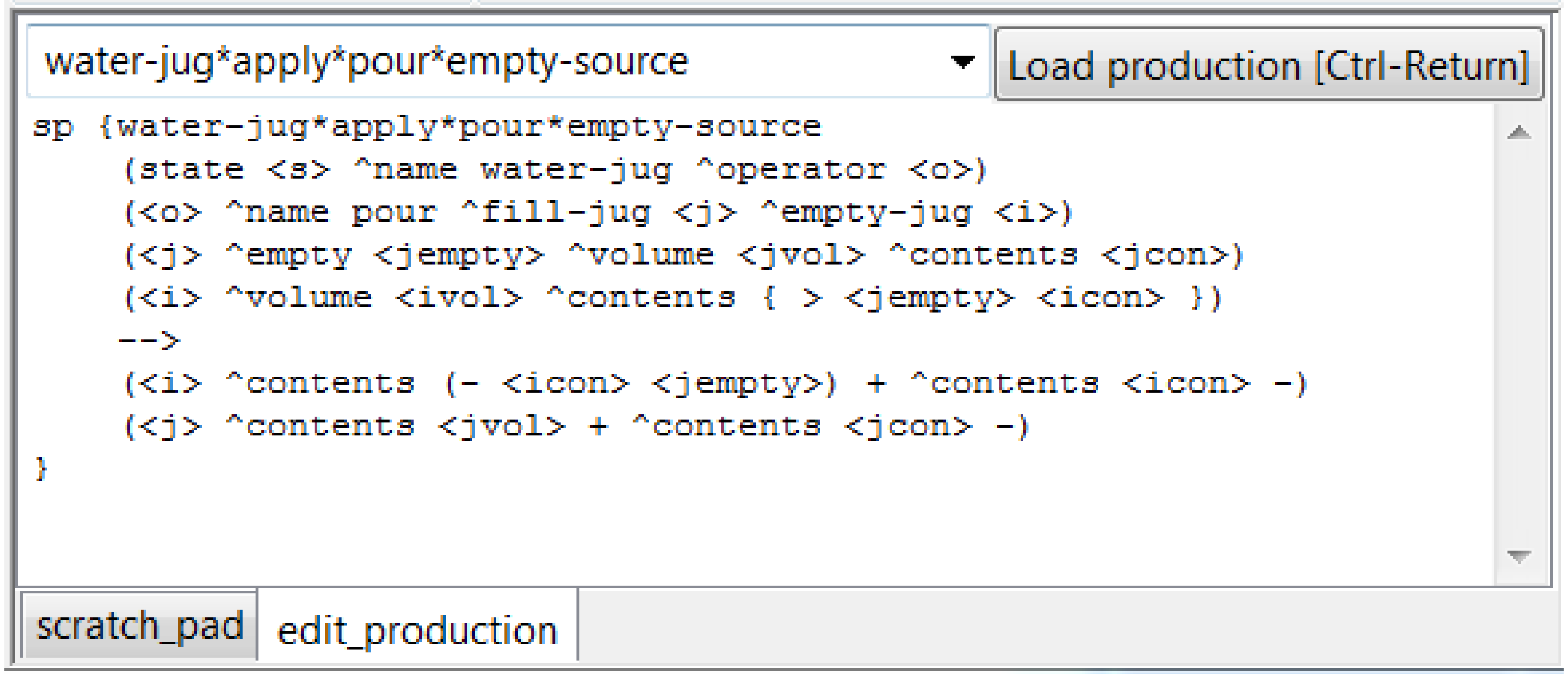
- Document common debugging methods
- Fix bugs that have cropped up in the Java Debugger
- Add functionality to the Java Debugger
- Improve debugging capabilities in the CLI

Improve Interrupt Handling

- Be able to add/remove interrupts to rules through the debugger
- List rules with interrupts
- Interrupt on impasses
- Add special Interrupt/Monitor rules

Edit and Save Productions

- Extend the edit window to allow saving to source


water-jug*apply*pour*empty-source
Load production [Ctrl-Return]
scratch_pad
edit_production

```
sp {water-jug*apply*pour*empty-source
    (state <s> ^name water-jug ^operator <o>)
    (<o> ^name pour ^fill-jug <j> ^empty-jug <i>)
    (<j> ^empty <jempty> ^volume <jvol> ^contents <jcon>)
    (<i> ^volume <ivol> ^contents { > <jempty> <icon> })
    -->
    (<i> ^contents (- <icon> <jempty>) + ^contents <icon> -)
    (<j> ^contents <jvol> + ^contents <jcon> -)
}
```

Improve Debugger Interface

- Autocomplete production names
- Filter output through programs like grep
- Color or highlight desired words in the output

Improve Print

- `print s1 --depth 2`

```
(S1 ^epmem E1 ^io I1 ^jug I4 ^jug J1 ^name water-jug ^operator O3
       ^operator O4 + ^operator O5 + ^operator O3 +
       ^reward-link R1 ^smem S2 ^superstate nil ^type state)
  (E1 ^command C1 ^present-id 1 ^result R2)
  (I1 ^input-link I2 ^output-link I3)
  (I4 ^contents 3 ^empty 0 ^volume 3)
  (J1 ^contents 0 ^empty 5 ^volume 5)
  ...
```

- `print s1 --depth 2 --only jug`

```
(S1 ^jug I4 ^jug J1)
  (I4 ^contents 3 ^empty 0 ^volume 3)
  (J1 ^contents 0 ^empty 5 ^volume 5)
```

Improve Print

- `print o5 --depth 2`

```
(O5 ^id 33 ^next O8 ^property P7 ^property P9 ^x 5 ^y 9)
  (O8 ^id 75 ^next O15 ^property P11 ^property P12 ^x 8 ^y 3)
  (P7 ^name color ^value red)
  (P9 ^name shape ^value square)
```

- `print o5 --depth 2 --ignore next`

```
(O5 ^id 33 ^property P7 ^property P9 ^x 5 ^y 9)
  (P7 ^name color ^value red)
  (P9 ^name shape ^value square)
```

Improve Print

- `print s1 --depth 2 --ignore-arch`

```
(S1 ^jug I4 ^jug J1 ^name water-jug ^operator O3
       ^operator O4 + ^operator O5 + ^operator O3 + ^type state)
  (I4 ^contents 3 ^empty 0 ^volume 3)
  (J1 ^contents 0 ^empty 5 ^volume 5)
  (O3 ^fill-jug J1 ^name fill)
  (O4 ^empty-jug I4 ^fill-jug J1 ^name pour)
  (O5 ^empty-jug I4 ^name empty)
```

Additional Ideas

- Stop runaway execution
  - Excessive backtracing
  - Explosive partial-rule matching
  - Successive state no-change impasses
- Print wmes as they were in previous timesteps
  - Use episodic memory?

Feedback

- Improved Interrupt Handling
- Save Productions to Source
- Improve Debugger Interface
- Improving Print Statements (only/ignore)
- Stop Runaway execution
- Print historical wmes

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