Comments on Documenting Models
Based on Documenting an ACT-R Compiler
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- Documenting a large model
- Counted all the rules at http://act.psy.cmu.edu/
  - Brief reflection of the vision of UTCs
- Lessons for documenting models

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Large ACT-R Model with Herbal  
(Paik, Kim, Ritter, & Reitter, in press)

- Built with Herbal/ACT-Rv2 compiler (Paik)
- 2-way compiler: novice, expert
- Paik and Kim wrote model as HTA (14 tasks, 538 actions) in 4 hours
Dismal Spreadsheet task
(Kim, 2008)

• 30 to 20 min., non-iterative task, 4 trials
• 14 subtasks
• Uses Dismal
• N=30, 4 trials, some retests

• (looks like relearning is why menus are liked, not use or learning, Kim & Ritter, 2015)
## Model Sizes

<table>
<thead>
<tr>
<th>Models with Expertise</th>
<th>Novice</th>
<th>0%</th>
<th>10%</th>
<th>...</th>
<th>50%</th>
<th>...</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decl. mem. elements used</td>
<td>1,152</td>
<td>1,152</td>
<td>1,091</td>
<td>...</td>
<td>845</td>
<td>...</td>
<td>538</td>
</tr>
<tr>
<td>Production rules</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>617</td>
</tr>
</tbody>
</table>

Total, about 6,000 rules
12 rules/min. vs. 5 min./rule
(0.78 min/rule conservatively)

- Several ways to create models
  - (a) a simple model from DM tree,
  - (b) Compiled model from a DM tree
  - (c) intermediate expert models \(N=\infty\)
  - (d) Learned models (500 to 1000 rules over 100 trials)
Summary of Previous Models

• All models in act.psy.-cmu.edu/models (late May 2015)
  – useful resource, by the way, and thanks to those who have documented their code

• 53 papers with 82 rule-based models.
  – mean = 30.3 rules
  – mode = 19.5
  – max = 122

• So, some models
  – Not a lot
  – Not reused
  – Best set
  – Useful
Recommendations for Models

1. Label the model file/folder appropriately.
   - suggest <first author last name><further initials><year or other ID>, e.g., paikKRR-tochi or paikKRR15. There were many badly named, hard to use files and directories e.g, ‘model’.

2. Document the code/files, and format and author them clearly.
   - Include contact details & date
   - readme.txt, and note version of ACT-R

3. Document the paper that used the code in the code
   - I have a directory of code but can’t always place the paper it came from!

4. Include
   - modified architecture bits
   - analysis functions/macros/etc. (such as matlab),
   - raw data (labeled very well)
   - appendixes, etc.
   - trace of the run

5. zip files for large sets (vs. DMG or separate links), but YMMV

6. Be helpful and inclusive, but 420M seems too helpful, but YMMV

7. Would be nice to have papers numbered on web site, with 50 it would help to keep track when working through them
References


How was the fit?

(29 r’s > .9, and one r=.569)