Diversions and Resources

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Acknowledgments

ONR (N00014-11-1-0275; N091-086/P10008; N00014-10-1-0401; #W911QY-07-01-0004; N00014-03-1-0248) DTRA( HDTRA1-09-1-0054); UK MoD (RT/COM/3/006); Darpa (N66001-1047-411F); DMSO.
Jokes

- How many (Soarer, connectionists, cognitive modellers) does it take to change a light bulb?
- What do you get when you cross a mountain climber and a cognitive modeller?
- Massively parallel connectionist network conference...
- I don’t believe that Bayesian statistics are useful to represent human cognition, but, I’m willing to reconsider my position if you have any good evidence.

Are at http://acs.ist.psu.edu/papers
Learning-Users

- One of the strengths/weaknesses is the members of the community
- New users
Learning: & Forgetting


three stages of forgetting v2.graffle
Learning & Forgetting-Tutoring

- Testing within the context of a Moving Target Tutor created with MCWL
- Moving towards a PSCM model in tutor as tutored knowledge, expert model, and student model framework

Figure 1. Practicing subskills in the MTT.
Learning & Forgetting-Testing

- Testing within the context of MIS with Joe Sanford and Dr. Joseph Siu (Nebraska)
Moderators
CaffeineZone.net

- Provides tool to describe and use caffeine
- Available on the iTunes store, free version and soon a paid, ad-free version
- Intended to be free to the military
- Done with ONR, then Applied Cognitive Systems LLC and Dr. Martin Yeh (CSE, PSU)
Moderators: Social impacts on cognition

- Start to represent the effects of social aspects on cognition and behavior

- How can you break the will of an agent with no will?


\[
p_a = \frac{1}{1 + \left( \frac{1}{\ell_d} \times e^{\frac{1+\left((d_{friend} \times g_{size}) + d_{leader} \times h_{size} \times d_{observer} \times (c + k)\right)}{1+k}} \right)}
\]
Moderators: Appraisal

- Start to represent the effects of appraisal
- Not buildable upon — as source code

Networks and Cognition: Terrorism scenarios

- Scenario for use in teaching and simulation of terrorism networks
- Created by a former FSO
- One more created, 2 more being created
Network and Cognition: ANA—A Network Analysis tool

- Provides visualizations of networks and network evolution

Network and cognition:
VIPER & Intelligent Heterogenous Agent Networks

- Provides visualizations of networks and network evolution

Interaction: Early Sim-eye & -hand

- Joke on interaction
- Provide models access to simulations and thus knowledge


short-nott.2.mov
Interaction: Bitmap based interaction

- Provides models access to simulations and thus knowledge


pb270194.mov

Interaction: SegMan

- Lets models test interfaces and theories
- Could save 30 years/day


pb270194.mov
reifers-demo804.mov
Moderators: Challenge and threatened

Model of challenged and threatened behavior


Resources for Usability: High-level Languages like Herbal

- A review of high-level languages
- Modeling differences in expertise
- 20 min. non-repetitive task
- 9 rules+540 facts/543 rules per model, 10K total learned rules
- N=40 human subjects


Resources:

Modelling Methodology

- Noted as needed

- Basic psychology of interest

- *How to run studies*
  - (Ritter, Kim, Morgan, & Carlson, accepted, Sage)

- How to test models
  - Gluck & Pew (2005)
  - Cognitive science special issue (Busemeyer, Gluck, & Bello, 2008)
  - Number of times to run models (Ritter et al., in press)
Non-Conclusions

Not (My) Issues for your Challenge

- Language
- Simple network statistics
- Where do networks statistics come from?
- How does physiology support cognition?
- Multiple-levels of representation
- Individual differences
- The domains I used, including Driving
- Terrorism

- People are purple - Frank Ritter, US/UK OOS Programme Agreement Workshop, April 2006.
- The point is insights
- Reuse
Conclusions

Issues for your Challenge Project

- Encourage the Community of practice that arises (will arise) (Newell, 1990, p. 503)
  - bringing more in
  - teaching them (method and teaching materials)
  - helping them prosper
- Learning, forgetting, and the rest of the hard, traditional cognitive bits
- Social aspects of cognition, including networks
- Moderated aspects of behavior and of will
- Explanations (Newell, 1990, p. 503)
  - We need some good jokes as a way to present our stories 😊
  - We need good diagrams, displays, and scenarios to explain our models
  - We need good movies to explain our models
- We need models easy to use and reuse (Newell, 1990, p. 503)
  - These seem to be architecture, which is surprising
  - These seem to be general software
  - ACT-R/PM does not go far enough, we will have to have something like SegMan
- Resources we have: theories, models, conferences, books, FAQs, datasets, architectures, XML