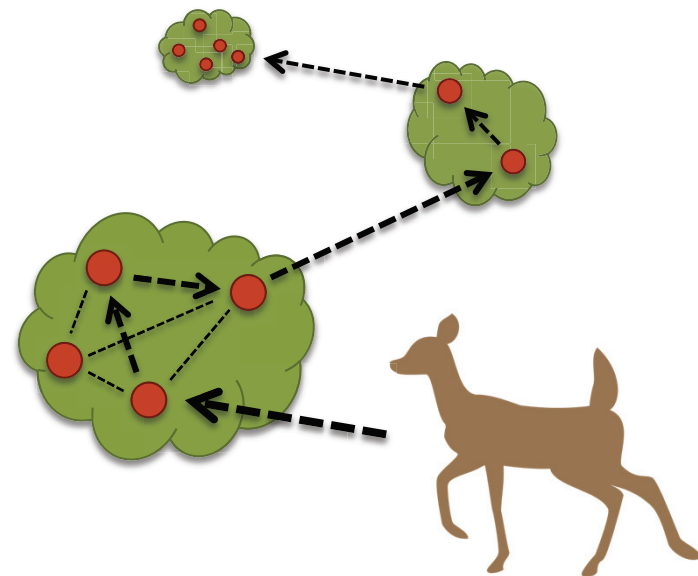


Human memory search as a random walk in a semantic network

Joshua T. Abbott, Joseph L. Austerweil, Thomas L. Griffiths
Department of Psychology | University of California, Berkeley



time	animal
1	dog
2	cat
3	.
4	.
5	hamster
6	.
7	.
8	.
9	.
10	tiger
11	lion
12	.
13	monkey
14	.
15	giraffe
16	.
17	.
18	cheetah
19	.
20	.

“Pets”

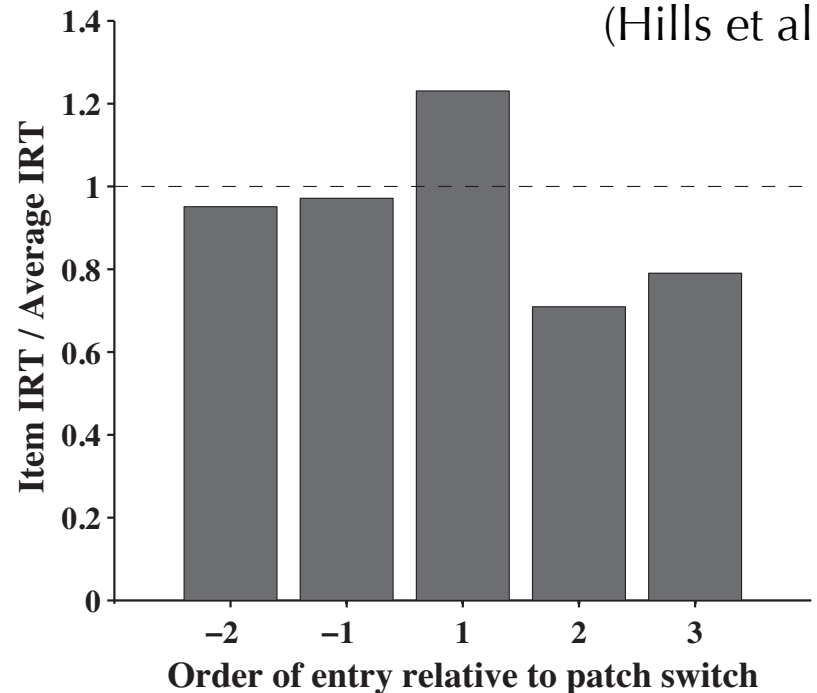
“African”
or
“Zoo”
animals

Optimal Foraging Theory:

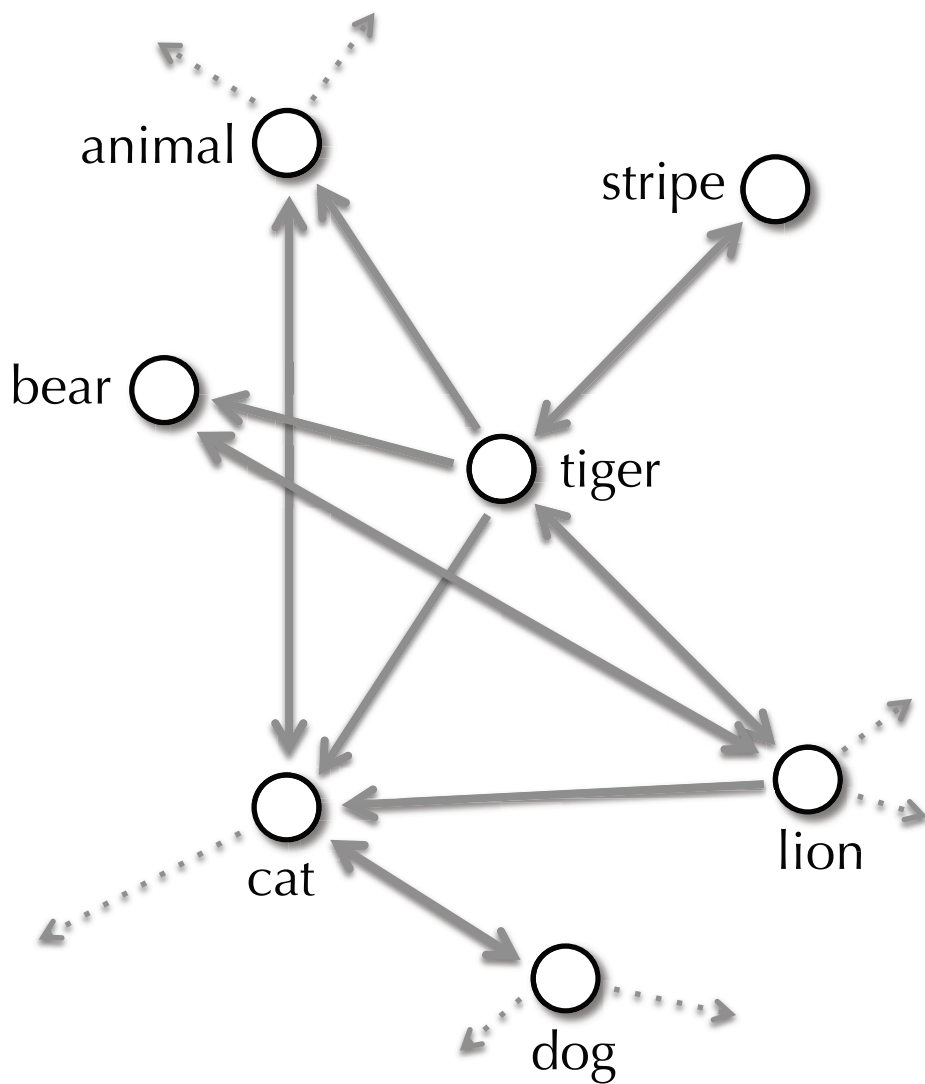
Leave a patch when the instantaneous rate of return within a patch falls below the average rate of return over the environment.

Human Inter-item Response Time (IRT) ratios

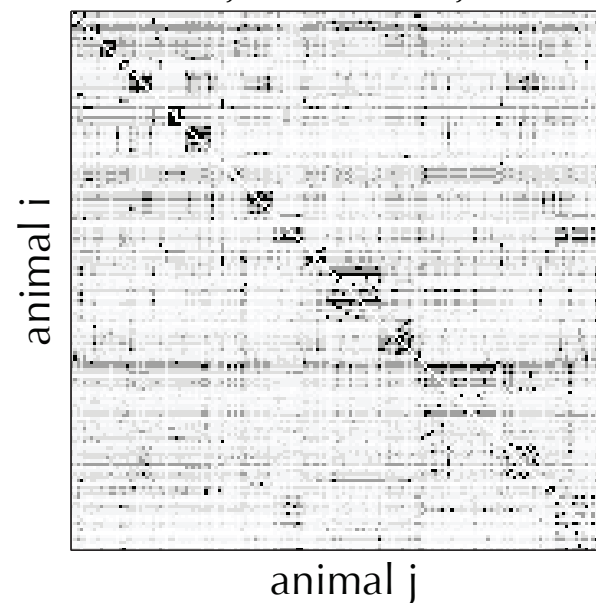
(Hills et al., 2012)



Semantic Network

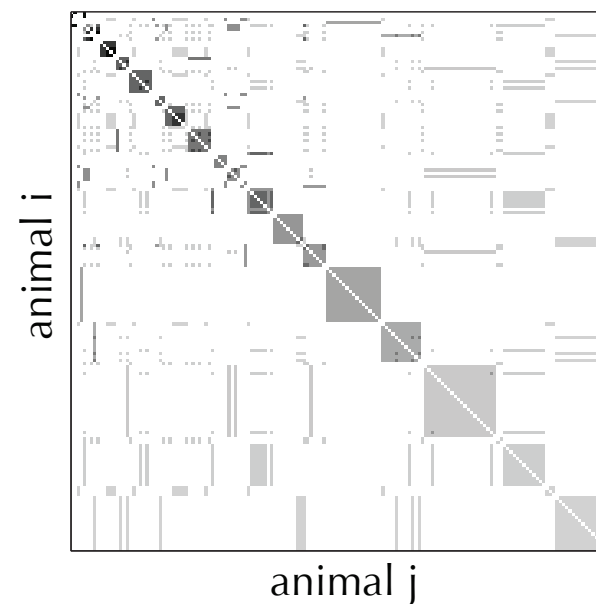


$$s_{ij} = \exp\{-d_{ij}\}$$



POSTER
W86

$$S = FWF' \text{ (additive clustering)}$$



Random walk simulations

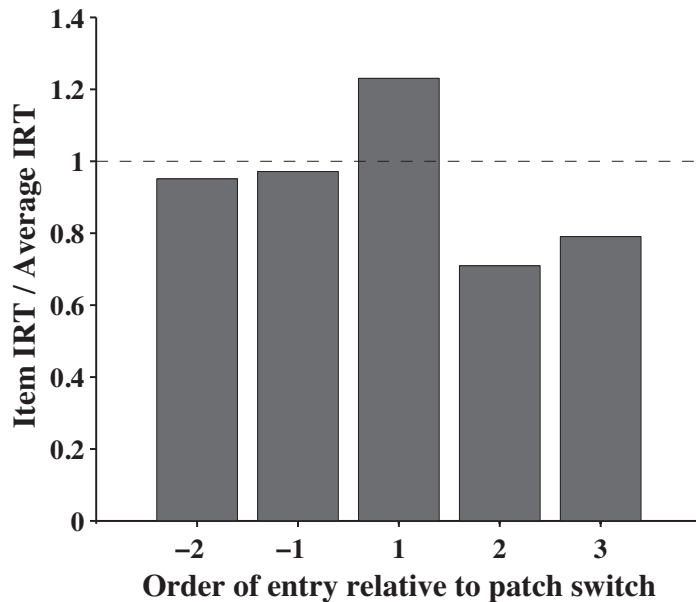
iteration	node
1	animal
2	dog
3	house
4	dog
5	cat
6	play
:	:

Iterations to IRTs:

$$IRT(k) = \tau(k) - \tau(k-1) + L(k)$$

$\tau(k)$ denotes the first time animal k was visited
 $L(k)$ is the length of the word for animal k

human results (Hills et al., 2012)



model results

