Block Practical: Connectionist models and cognitive processes

Part 4: **Replicating a Model**

Olivia Guest

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▶ Pedagogical: learn from "better"/published research!

▶ Augment: make model explain, predict more!

▶ Why start from scratch?

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- By being patient: programming takes time, running code takes time, etc.

- If you get stuck you can always ask the original authors!

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- ► What assumptions is the model making, what assumptions is the theory making?

- ► Are implementation details important to the model, to the theory?

- ► Does the model uniquely support a specific theory?

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- ▶ What mechanism(s) is the model proposing?

- ▶ What are the model's predictions?

- ▶ Can the model account for data it has not seen?

- ▶ How well does the model compare to other accounts?

Tyler et al. (2000)

Conceptual Structure and the Structure of Concepts: A Distributed Account of Category-Specific Deficits

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- ▶ Model for semantic memory after neurodegenation

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Conceptual Structure and the Structure of Concepts: A Distributed Account of Category-Specific Deficits

- ▶ Model for semantic memory after neurodegeneration

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- ▶ features of living vs non-living things differ $\rightarrow$
  their representations differ $\rightarrow$
  their preservation after neurodegeneration differs

Tyler et al. (2000)

Example of patient's ability to draw common items
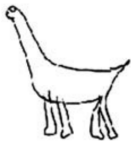

(a) Nonliving things*

a1.   a2.   a3.   a4.   a5.

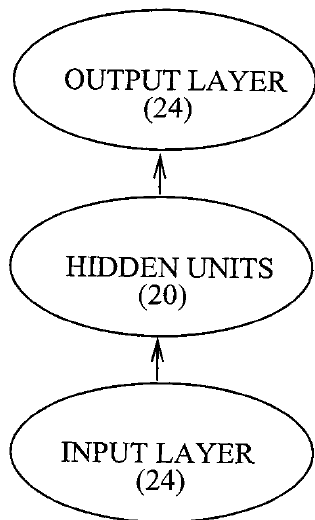(b) Living things[†]

b1.   b2.   b3.   b4.   b5.

*a1. anchor; a2. bus; a3. chisel; a4. helicopter; a5. windmill
[†]b1. camel; b2. crocodile; b3. duck; b4. penguin; b5. zebra
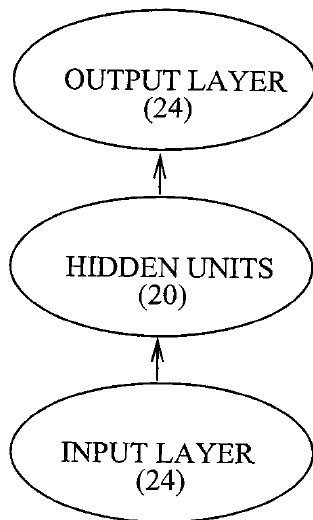
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- The architecture: connectivity, widths of each layer, etc.

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- The environment: input and target patterns!