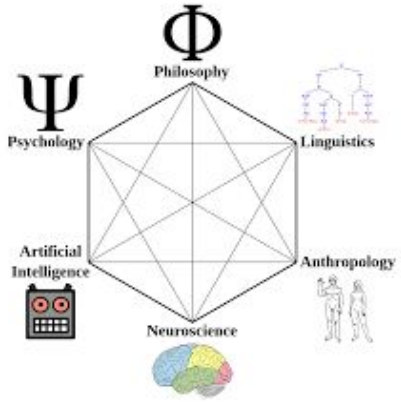


COG 250 Tutorial 3

UNIVERSITY OF TORONTO
Cognitive Science

TA: Konstantinos Xanthios

Oct. 18, 2024

TUT101, TUT201, TUT301, TUT401

RW142



Outline

Midterm Test 1 Format

Concept Review

Group Activity: Practice Questions

Midterm 1: October 21 2024

Midterm 1: Oct. 21, 2024. Worth 10% of your grade

- **Same location as our lecture, during the same lecture time (3 hours: 2-5pm).**
- You will be provided with a list of 10 concepts. You are responsible for **choosing 6 of these** and providing:
  - **Definition (2 points):** Briefly define the concept in question
  - **Relevance (4 points):** Explanation of its Relevance to the course
  - **Criticism** of the concept (**2 points:** this could be taken from Mark's lectures).
    - OR: You could use the concept in question to criticize something else.
  - **Novel Connection (2 points):** Connecting the chosen concept to another idea in the course. For example, if the concept is "Dualism", you could choose to talk about it's relation to one of the approaches to Cognitive Science discussed in class (Computational Functionalism, Connectionism, etc.)
- Aim to provide this information in approximately 200 words for each concept, although you can use as much space as is necessary

Please note: The point values here were taken from last year's Midterm 1, where **each concept was worth 10 points, with the test being out of 60.**

Test Tips

Remember to elaborate on how the concept in question is relevant to the course content.

- ***The Relevance section is worth twice as many points***- please keep this in mind when you're writing your answers. Try and draw from as much of the course context as you can
    - ***Aim for a solid 3-4 sentences on this***
    - For example: if the concept is Dualism- you can talk about how dualism presents the mind body problem. The division between mental and physical becomes relevant for how we study the different frameworks of cognitive science

Please try on novel connections and criticisms, even if you are stuck and can't think of anything! We will not deduct points on this.

- ***Aim for a solid 2 sentences for each.***
- For Dualism:
    - **Criticism:** This distinction between mental and physical (or mind and body) simply doesn't hold up for our contemporary understanding of the mind (you can draw from lecture 5 and minimal minds to make this point)
    - **Connection:** this distinction between mental and physical was taken up in computational functionalism and its influence from linguistics (syntax, semantics)
- The interlude lecture (lecture 5) and it's emphasis on minimal minds, is a great source for exploring novel connections

Advice from Mark's lecture: Excellent answers

- how many ideas can you successfully bring together- quality is also important
- Need comprehensive answer- test for comprehension- grappling with main concepts of the course

Minimal Minds and Biological Plausibility

Recall from last time: Connectionism was found to be more **biologically plausible** than Computational Functionalism:

- In modelling it's account of cognition after how our brains work (as opposed to how language works), connectionism is closer to realizing Strong AI despite its shortcomings

Our interlude lecture explored more on this idea of **biological plausibility** for certain cognitive systems.

This lead us to discuss Minimal minds: the goal is to establish the minimal conditions that must be satisfied for an entity to be in cognitive states or carry out cognitive processes.

Through Huebner's work on minimal minds, we were able to see distributed representations happening in bee communication, similar to what we've seen in **distributed patterns of activation in connectionism.**

Huebner and Bees: 4 Characteristics of Minimal Minds

Huebner suggests that suggest that the possession of a minimal mind requires **4 characteristics**:

- 1. An organism must possess internal states and processes that have the function of adjusting the entity's behavior in ways that allow it to cope with features of its environment in ways that are not fully determined by the design of the system;
  - **Bees:** are capable of adjusting behaviour based on external factors- weather conditions . They Use internal processes to adjust states, decision making is influenced by past events. Bees satisfy first requirement!
- 2. These states and processes must be capable of standing-in for various features of the environment that are significant for the system, and they must be capable of doing so even in the absence of immediate environmental stimuli;
  - **Bees:** Do these states stand in? Yes, bee waggles, encodes information- direct distance quality, allows bee to understand info for food- wiggles back in hive to communicate, holds a distributed representation decoded by the hive
  - Dancing becomes a representation that stands in for information in the world
- 3. These states and processes must be part of a larger representational scheme that allows for a variety of possible contents to be represented (in a systematic way) by a corresponding variety of possible representations;
  - **Bees:** Waggle dance is systematic- system of parts, angle of dance relative to hive displays food source. This is a system of ideas that hang together, use variety of representations, allows bees to convey many information sources
- 4. There must be norms governing the proper production, maintenance, and use of these representations under various environmental conditions.
  - **Bees:** Waggle dance becomes interpreted in certain ways- crucial for effectiveness of dance, precise wiggle=more accurate info, adjust dance with respect to position of sun and wind Bees are able to update internal maps subject to environmental conditions

Midterm Practice: Group Activity

Over the next few slides, I'm going to hold up a few key terms from the course. All of these have been talked about in our tutorials

In groups of 3-5 students, please provide the following for each:

- A definition of the concept
- Explain its relevance to the course content
- Provide a criticism of the concept
- Provide a novel connection for that concept

To answer this, you can use your notes from class, the lecture slides, or my slides from our previous tutorials. In general, watch for the content that I've highlighted in my slides- these are some of the key concepts we are dealing with here

We will spend about 5 minutes for each term, then return to share our answers with the group. It would be a good idea for you guys to take notes and supplement your answers with other's responses!

Dualism

Definition

Relevance

Criticism

Connection

Computational Theory of Mind

Definition

Relevance

Criticism

Connection

Multiple Realizability

Definition

Relevance

Criticism

Connection

Chinese Room Argument

Definition

Relevance

Criticism

Connection

Neural Networks

Definition

Relevance

Criticism

Connection

Biological Plausibility

Definition

Relevance

Criticism

Connection

Mind-Body Problem

Definition

Relevance

Criticism

Connection

Closing

Best of luck on your Midterm!

- For studying over the weekend, work on filling out the details using these terms as practice. Supplement your answers with more content from class, or even the readings!

Next Tutorial: **November 15th**

- Essay Workshop
- Topics will be released after the Midterm
- Midterms will be graded by then