

Multimodal Perception and Cognition Re-Examination

Medialogy 7th Semester, Aalborg

Friday 22 March 2013, 09.00 - 12.00

Instructions and information

- There are 11 questions and you should attempt to answer all of them.
- You are not allowed to bring any written material or electronic devices into the examination room.
- You have 3 hours to complete the examination.
- The maximum number of marks for each question is 10. You must get at least 50 marks in total to pass the examination.
- You are advised to spend about 15 minutes on each question.
- Write your answers in blue or black ink. Do not use any other colour of ink.
- Hand in at most one answer to each question. If you hand in more than one answer to a question, you will get no marks for that question.
- Write your answers on the paper provided. Do not write your answers on the question paper. Anything you write on the question paper will be ignored.

DO NOT TURN OVER UNTIL TOLD TO DO SO!

Questions

1

- a. The modern era in cognitive psychology can be said to have started in the 1950s. Briefly describe some of the important early work done in this area. (5 marks)
- b. Briefly explain how fMRI data has been used to improve our understanding of romantic love. (5 marks)

2

- a. Explain what is meant by the terms *dissociation* and *double dissociation* in cognitive neuropsychology. (5 marks)
- b. In the context of artificial neural networks, briefly outline the process of *back-propagation*. (5 marks)

3

- a. In the early 1830s, Robert Addams noticed that when he stared at a waterfall for a time and then shifted his gaze to the rock-face beside it, the rock-face appeared to move upwards. What is this phenomenon called and why does it happen? (5 marks)
- b. Briefly explain the phenomenon of *aliasing* in the context of motion perception. Can this phenomenon occur in daylight? (5 marks)

4

- a. Briefly explain how the 3D effect is produced in an autostereogram. (5 marks)
- b. Explain what is meant by the term *diplopia*. How does diplopia relate to binocular rivalry? (5 marks)

5

- a. Two sound sources, A and B, are both producing a 600 Hz simple tone. A has 9 times the intensity of B. How much greater is the amplitude of A than that of B? (5 marks)
- b. A and B are two sounds with the same frequency. The amplitude of A is 10 times that of B. What is the intensity in dB of A relative to B? (5 marks)

6

- a. When listening to a repeating galloping pattern (see Fig. 1), does the perception of stream segregation become stronger or weaker the more times the pattern is repeated? Explain your answer. (5 marks)

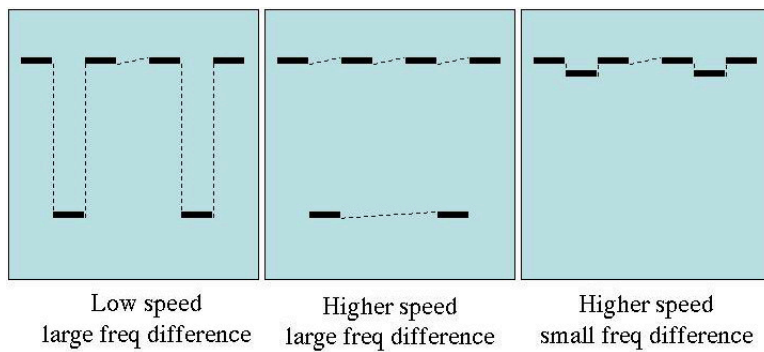


Fig. 1: Galloping pattern. Vertical dimension represents log frequency and horizontal dimension represents time, increasing from left to right.

- b. As illustrated in Fig. 1, a galloping pattern is more likely to be perceived to be segregated into two streams when the frequency difference is large and the rate of presentation is high. How is it possible to induce a two-stream percept when the pitch of all tones is the same? (5 marks)

7

- a. How has motion detection been studied experimentally in infants and very young babies? Briefly describe what such experiments have shown. (5 marks)
- b. Are young babies better or worse than adults at distinguishing between the faces of two different monkeys of the same species? Briefly sketch how one could determine this experimentally. (5 marks)

8

- a. Explain the difference between overt and covert visual attention. (5 marks)
- b. Explain the difference between an *exogenous* and an *endogenous* cue. Briefly describe, with a graph, how the effects of such cues develop over time. (5 marks)

9

- a. In the study of consciousness, what is meant by the term *epiphenomenalism*? Give an example of experimental evidence that seems to support this view. (5 marks)
- b. Briefly explain what is meant by *the hard problem* in the context of consciousness. Briefly outline 4 ways in which researchers have responded to the hard problem. (5 marks)

10

- a. Briefly describe what is meant by *prosopagnosia*. (5 marks)
- b. What is *Capgras syndrome*? What does this condition tell us about the sensation of familiarity?

11

- a. The visual pathway is often described as being split into the *what stream* and the *where stream*. Explain what this means. (5 marks)
- b. Briefly explain what is meant by *optic ataxia*. What part of the brain is typically damaged in patients suffering from ataxia? Is this part of the brain in the dorsal stream or ventral stream of the visual pathway? (5 marks)

END OF EXAMINATION