
Chapter 5: ConvNets and ImageNet

→ Reading/Mining/Discussion Assignment

Please ...

1. Read “Chapter 5: ConvNets and ImageNet” of Melanie Mitchell’s “Artificial Intelligence: A Guide for Thinking Humans” book.
2. With respect to the questions presented for the “Chapter 5: ConvNets and ImageNet” reading, construct a document containing question/answer pairs, one pair of each question, where the answers, with perhaps just a small number of exceptions, are more or less lifted from Melanie Mitchell’s text. Save your document as a **pdf** file.
3. Post your question/answer document to your web worksite.
4. Do your best to internalize your question/answer pairs in some sort of semantic sense, so that the answers are likely to come back to you when prompted by the questions.
5. Come to class for the discussion of “Chapter 5: ConvNets and ImageNet,” when the time rolls around, prepared to participate in the discussion.
6. Please do all of this within one week of the “distribution” of this assignment.

Chapter 5: ConvNets and ImageNet - Questions

1. He combined ideas from Fukushima’s neocognitron with the back-propagation algorithm to create the semi-eponymous “LeNet” – one of the earliest ConvNets. Who was he? Who was his postdoctoral advisor? And, in addition to developing “LeNet”, what was his contribution to the field of neural network research?
2. What is WordNet? Please answer by referencing its creator (the human most responsible for its existence), saying something about its use, and presenting, in just two or three sentences, a high-level description of its structure?
3. What is ImageNet? Please answer by referencing its creator (the human most responsible for its existence), saying something about its use, and presenting a high-level description of its structure, being sure to mention WordNet in doing so.
4. Specifically, what role did ImageNet play in the advancement of computer programs dedicated to the problem of “object recognition.”
5. What is the Mechanical Turk (Amazon’s Mechanical Turk), and what role did it play in building ImageNet?

6. Describe the nature and operation of the ImageNet competition.
7. What was the most notable thing about the 2012 ImageNet competition?
8. What was the most notable thing about the 2015 ImageNet competition?
9. Describe some commercial applications of convolutional neural networks.
10. Have ConvNets surpassed humans at object recognition?
11. What is the relationship between “object recognition” and “visual intelligence?”