

CAP 5636 - Homework 1 - due Monday, September 14th, 2026

For P1 and P2, write two paragraphs of approximately 50 words each (four paragraphs total). For P3 and P4, include an LLM-generated two-paragraph response, also with approximately 50 words per paragraph, along with your answers to parts (a) and (b).

Submit a Word or PDF file with the requested answers.

P1. New York Times article about the perceptron, July 13, 1958 (2 points)

Read the New York Times article about the introduction of the perceptron.

Summarize the main claims of the article in a paragraph.

In another paragraph, discuss your views of this article. Were the claims realistic? Accurate? Did they show foresight? Hype? Feel free to research the afterlife of the perceptron idea on the internet.

Do not use ChatGPT or other LLMs for this task.

P2. Nick Bostrom: How Long Before Superintelligence? (1998) (2 points)

Read Nick Bostrom's article about the coming of superintelligence.

Summarize the main claims of the article in a paragraph.

In another paragraph, discuss your views of this article. Are the claims realistic? Accurate? Did they show foresight? Hype? Feel free to research the afterlife of the superintelligence idea on the internet.

Do not use ChatGPT or other LLMs for this task.

P3. Solve P1 with ChatGPT or other LLM (1 point)

Solve problem P1 using ChatGPT or another LLM. Develop a prompt that generates text most similar to your answers above.

- a) Describe the prompt you used to ask the LLM. Specify which LLM you used and explain why you chose that LLM and prompt.
- b) Compare the LLM's answer with yours. Which one is better? Explain why.

P4. Solve P2 with ChatGPT or other LLM (1 point)

The requirements are analogous to those for P3.

P5. Background (4 points)

From the website “Introduction to Deep Learning - MIT 6.S191,” <http://introtodeeplearning.com>, watch the following lectures:

- Lecture 1: Intro to Deep Learning (Spring 2026)
 - <https://www.youtube.com/watch?v=II4giR4vOOo>
- Lecture 2: Recurrent Neural Networks, Transformers and Attention (Spring 2026)
 - <https://www.youtube.com/watch?v=d02VkQ9MP44>
- Lecture 3: Convolutional Neural Networks (Spring 2026)
 - <https://www.youtube.com/watch?v=pqIcoskUuWs>
- Lecture 4: Deep Generative Modeling (Spring 2026)
 - <https://www.youtube.com/watch?v=R8V8CbuxryI>

While watching the videos, keep a notebook ready (on paper or on a computer). Take one- or two-line notes (N:) or questions (Q:), prefixed by the timestamp in the video. In particular, take a note when (a) something in the video gives you new knowledge or insight or (b) something in the video is unclear or raises a new question.

For instance:

15:30 Q: Why would a backward connection in a neural network be the same thing as memory?
18:00 N: So the reason why the object can be detected everywhere on the screen is because the convolutions are the same everywhere.

I expect you to have at least 10 such notes or questions per lecture.

Do not use ChatGPT or other LLMs for this task.

What to submit

Submit a Word or PDF file with five sections, one for each of the problems above.