CSCI-GA.2565 — Final Project

Version 1.1

Instructions.

- **Grading rubric.**
  - **Date/time:** The session is during 8:00-9:50 PM on Tuesday, December 16, which is listed as our final exam date; a perfunctory gradescope handin must be completed by noon on December 11.
  - **What you must bring:**
    1. Your NYU ID.
    2. A "poster", which at a minimum is six standard US letter sheet of paper (8.5×11 inches), and at a minimum contains project title, group member names, and something which attracts people to talk to you.
       I did not arrange for any easels, or other proper poster mounts. I will bring a lot of tape, people can use it to stick multiple sheets or something larger to the walls of the room.
    3. Anything else to help present your project; e.g., you can bring your laptop and show some demos and figures on it.
  - **To receive *any* points:**
    1. I must take a photo of your NYU ID during the session (this is true for *every* individual; it does not suffice for me to take one picture for your whole group).
    2. Your name must appear somewhere on the printed sheets.
    3. You must complete the gradescope handin `Final project perfunctory handin`, where your only obligation is to correctly identify your group via the gradescope UI.
  - **Detailed evaluation:**
    * If I come speak to you at your poster:
      - If your project is based on pico-llm, you need to be able to explain what is new.
      - Just as with pico-llm, you need to be able to interact with me and answer my questions, which will be at a comparable difficulty to pico-llm (e.g., "how do you implement nucleus sampling").
    * If you are in good standing in the class (perfect score) and I don't talk to you: you are fine.
    * If you are not in good standing (e.g., low pico-llm score), you should expect to talk to me.
    * *I am not evaluating the quality of your poster or the "amount" of extensions you implemented;* I am aware that a powerful LLM can one-shot all of this.
  - **The intent of this session:** For everyone to discuss AI/ML with each other and mingle.
- **Group sizes.** You may work in groups up to 5; groups need not match `pico-llm`.
- **Consulting LLMs and friends.** As usual, you must list all sources, both in your printed sheets, and also when asked.

Version history.

1.0. Initial version.

1.1. Added "Detailed evaluation".

Suggestions.

1. **Extend the pico-llm project.** For instance:
    - Intepretability analysis; see anthropic's blog for many examples.
    - RL-based post-training to develop a reasoning model; see the pointers in the typed notes for lecture 9.
    - Test-time search for reasoning; see lecture 9 once again.
    - Any other post-training, e.g., alignment and DPO/RLHF (also lecture 9).
    - Any improvements in computational efficiency.
    - Architectural improvements.
    - Linear attention heuristics, such as Gated DeltaNet and Kimi Linear.
2. Perform a literature survey on a topic of your choosing.
3. Any other ML project which is of clear relevance and overlap with course topics.