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Humans Emulating Machines: Mimicking Predictive Text Algorithms

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Active Learning Exercise – Humans Emulating Machines: Mimicking Predictive Text Algorithms
Instructor Guidelines – Estimated time: 1-2 full class periods

INTRODUCTION (To be recited to an in-person class; To be posted as an introduction for online classes)

There have been several pieces of technology throughout history that have significantly affected individual lives and societies. Yet, no piece of technology has been adopted as quickly by as many people and groups as **ChatGPT**. ChatGPT stands for Chat Generative Pre-trained Transformer; it uses a **deep neural network** to draw information from large datasets and generate human-like text. In this activity, we are going to engage in a (very) human process of information generation to understand the use of **predictive algorithms** to generate text in response to a given prompt. Then, we will analyze the consequences of such technology using our **sociological perspective**.

LEARNING OBJECTIVES AND GRADING RUBRIC

Student's achievement of the following learning objectives will be assessed at the end of this activity using the summative rubric listed below:

- Explain ChatGPT.
- Understand and explain how ChatGPT and other AGI-programs use predictive algorithms to generate text, audio, and visual products.
- Analyze and evaluate the functions and dysfunctions of this type of artificial intelligence.
- Consider possible functions and dysfunctions of this type of artificial intelligence.

	Descriptive Ability	*Analytical Ability (x2)**
A (5 pts)	Provided a clear and thorough description of ChatGPT and other comparable AI technology.	Provided a detailed analysis of at least one way in which ChatGPT affected or affects individuals **and** society.
B (4 pts)	Provided a clear and thorough description of ChatGPT.	Provided a detailed analysis of at least one way in which ChatGPT affected or affects individuals **or** society.
C (3 pts)	Provided a basic description of ChatGPT.	Provided a basic analysis of one way in which ChatGPT affected or affects individuals **or** society.
D (2 pts)	Provided a vague description of ChatGPT.	Provided a vague analysis of one way in which ChatGPT affected or affects individuals **or** society.
F (1 pt)	Tried but failed to provide a clear description of ChatGPT.	Tried but failed to analyze and evaluate any of its current and future effects of ChatGPT on individuals **or** society.
Points Possible	5 points	10 points
Total	_____/15	

*"Analytical Ability" skills are worth twice as many points as "Descriptive Ability" skills.

STEP 01: PROMPT AND RESPONSE WITH PREDICTIVE TEXT GENERATION

Have students form groups of five to ten people. Each group represents a "database" containing all the knowledge and experience shared among its members. Then, ask students to generate a response to the following prompt **based on what they think other groups will say**:

- [Insert any prompt you wish] (Example: "It is the first day of a new semester and Imogen is running late for their first class.")

STEP 01 (CONTINUED)

- You can run this activity until they have one full sentence, a full paragraph, or for a set amount of time regardless of how many words/sentences they generate.
- You can ask them to generate text word-by-word or sentence-by-sentence. ChatGPT and other comparable AGI programs go word-by-word, but it can take a bit longer and be complicated to have a group of students debating every word.
    - If you wish, you could raise this point during the post-activity discussion and consider how the speed of AI gives ChatGPT situational advantages when the speed of one's ability to respond is valued.
- **As needed, remind them that the goal is to try and guess what others will say – be "predictive" – rather than just come up with an original story.** This is the only way to replicate what ChatGPT and other comparable programs do when generating products.

STEP 02: STORY TIME AND ANALYSIS

Have each group share their response to the initial prompt. Then, evaluate the similarities and differences in their responses. If you are pressed for time, have one group share their response and have other groups assess the extent to which their group is like or different from the one that is shared.

- For quantitative data, you can count the actual number of differences.
    - Total number of words/sentences, number of different words, etc...).
- For qualitative data, you could have them subjectively assess the amount of variation on an ordinal scale (i.e. no variation, some variation, significant variation).
    - Some words used in one group may be synonyms of the words used in another group, making them different words but sharing similar meaning.
    - **The quickest and simplest way to analyze these stories is thematically (e.g. What did Imogen do? What happened to Imogen? Did they note how Imogen felt? If yes, how did Imogen feel? Was anything other than Imogen mentioned? etc...)**

STEP 03: GROUP DISCUSSIONS AND ACTIVITY CONCLUSION

In their groups, have students discuss the **functions** and **dysfunctions** of generating text using predictive algorithms. Then, open the class to a discussion of the same topic. Finally, have the class watch and discuss *"A.I. is About to Change the World"* (Duration – 14:40) by Kyle Hill.

Hill, K. (2023, July 31). A.I. is about to change the world [Video]. YouTube.
    https://www.youtube.com/watch?v=fepJ5oTroKc

- Any video that presents students with a general discussion of the known and possible functions and dysfunctions of ChatGPT and AI will work, but I've found this one to be useful.
- There is an advertisement read from 3:35 to 4:59 that you can skip using the time bar that appears at the bottom of the video when you hover over the video. You'll know the ad is about to start when he suddenly starts talking about his hair being tussled around.

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STEP 04: ASSESSMENT

Individually or in groups, have students respond to the following questions.

1. What is ChatGPT?
2. Explain the functions and dysfunctions of ChatGPT?
3. What functions and dysfunctions related to ChatGPT are you concerned about moving forward?