Part 1. The Game (1 Point)

Q1

The NLP task is the language model that generates the next most proprable word given certain input

Part 2: Opportunities and Challenges (4.5 Points)

Q2

1) "GPT-3 has been trained to write Hollywood scripts and compose nonfiction in the style ofGay Talese's New Journalism classic ''Frank Sinatra Has a Cold.'' , which indicates that novel and script writers could be replaced by the model.
2) "Customer service could be utterly transformed: Any company with a product that currently requires a human tech-support team might be able to train an L.L.M. to replace them.",. This quote indicates that customer service people will be replaced
3) "A few months after GPT-3 went online, the OpenAI team discovered that the neural net had developed surprisingly effective skills at writing computer software, even though the training data had not deliberately included examples of code." This quote indicates that the computer software engineer could be replaced by the model
   I believe computer software engineers will be less likely to be replaced by GPT3-like models anytime soon, as writing codes to fulfill specific demands is so complex and needs to be discreet. For example, in the industry, the code needs to be time and space efficient. There are just so many ways to reach the same result but the model might not be able to find the optimal way. Also, there is deployment followed by just writing code. Even though the code might work perfectly, it's just not compatible with other applications. Thus I think computer software engineers will not be replaced anytime soon.

Q3

1) "Some skeptics argue that the software is capable only of blind mimicry — that it's imitating the syntactic patterns of human language but is incapable of generating its own ideas or making complex decisions, a fundamental limitation that will keep the L.L.M. approach from ever maturing into anything resembling human intelligence.". This quote indicates that GPT3-like model can only mimic but not create, which can't resemble human intelligence.
2) "For these critics, GPT-3 is just the latest shiny object in the long history of A.I. hype, channeling research dollars and attention into what will ultimately prove to be a dead end, keeping other promising approaches from maturing." This quote criticizes that the GPT-3 like model costs lots of money that can have better use on development while it has no practical use.
3) "Other critics believe that software like GPT-3 will forever remain compromised by the biases and propaganda and misinformation in the data it has been trained on, meaning that using it for anything more than parlor tricks will always be irresponsible" This quote criticizes that the data used to train GPT-3 like model contains biases and using such biased model is irresponsible.

Q4

If models are simply “stochastic parrots”, “the software was using randomization to merely remix human-authored sentences” It suggests that that model isn’t of true intelligence. Rather, the development of hardware and software allows for enormous data trained on the GPT3 like models to do pastiche work. Here comes the first societal problem, while the data is enormous, it still might not be representative of the whole of humanity. For example, the majority of the data is in English while not everyone in the world speaks English. Also, less developed countries and regions don’t have access to the internet thus don’t have the opportunity to contribute to the training data.

Secondly, the inherent bias in the data will be passed down such as gender and race bias since the model is “built on foundations of uncurated data”. Last but not least, the data collected is static as datasets were trained and then stored. However, society progresses with time. Thus the old dataset might not reflect the current social norm and behaviors. Thus, if the models are simply stochastic parrots, the societal problems mentioned above will be exposed and exaggerated.

Part 3: Open AI Remedies (1 Point)

Q5

1) “reviewing ways in which the software is being used by outside developers, creating new tools to reduce the risk of toxic speech or misinformation”. They constantly scrutinize the use of the software
2) “ OpenAI’s software license explicitly forbids anyone to use their tools to ‘‘determine eligibility for credit, employment, housing or similar essential services,’’ which have been some of the most controversial applications of A.I. to date. Other banned uses include payday lending, spam generation, gambling and promoting ‘‘pseudo pharmaceuticals.’’. This quote indicates that openAI forbids the use of the software on controversial and personal applications.
3) “OpenAI also blocks any use of its software ‘‘to influence the political process or to be used for campaigning purposes”

Part 4: Intelligence or Lack of (4 Points)

Q6

- For intelligence

1) High-level understanding is about comprehension and critical thinking. Based on Johnson's article, the GPT3 -like model is able to comprehend as it is able to answer exam questions that test comprehension skills and score points equivalent to an average high school student.
2) For example in the CNN settings to learn about the graph, the neural nets learn the edge and frame in the early layers, deep down the layers, the nets can learn the details about the image, which is also pretty similar to how human visual perception works where we identify the outline before seeing the details. Thus, this example demonstrates some understanding in the nets.

- Against Intelligence

1）With the example of statistical language models that base on the frequency of the data points in the training point, such as the N-gram and HMM model in the course which are also

similar to GPT3 like models that rely on probability distribution. In this way, I would say the model isn't learning and understanding but doing mathematics to predict the missing word.

2) For example, in the tagger assignment of the course and so many other supervised tasks, the model relies on supervised learning; however, this is not how human learning works nor how intelligence works. Thus I doula say the model is just not getting to true understanding in this perspective

Part 5: Regulation (2 Points)

Q7

Given all the previous investment and recent improvements, we should keep building the large language models. As shown in the paper, the GPT3 model can be used for a variety of tasks without fine-tuning the pre-trained for a new task every time. The performance on different tasks by GPT3 model can already demonstrate it's a working model. The debate about whether the model is learning to comprehend and answer or just rephrase the training data doesn't arise from large language models as we still don't have a concrete understanding of what's going on in neural network architecture as a whole. Thus we shouldn't be stopped by the debate, but rather try to understand the mechanism behind it and improve upon that.

As to what is the right kind of organization to build and own something of such scale and ambition, I think any capable organization can build a great model. However, we should have a rigid system like the FDA for drugs to scrutinize and monitor the model development and usage. In this way, we can prevent monopoly like Google and Facebook to dominate the development and usage

Part 6: "Resisting the Urge to be Impressed" (Bonus)

Q8

1) Professor Emily Bender criticizes the headline of Johnson's article "A.I. Is Mastering Language. Should We Trust What It Says?". According to Bender, the title adopts the point of view of Open AI and asserts "AI" has mastered language while it's not and while AI has not existed. Such title puts people who is against the first part of the title as skeptics while it also fails to differentiate between people and AI because only humans can "say"
2) Professor Emily Bender criticizes Johnson for peddling AI hype. Based on Bender, what GPT-3 like models achieve as shown in Johnson's article isn't real. For example, Bender argues that GPT-3 model has no access to facts but just the strings in training data. To bender, the model has no ability to sense and comprehend what is fact. Thus, what GPT3 generates isn't nonfiction but strings that can be accidentally verified by humans.
3) Professor Emily Bender criticizes Johnson for "uncritically presenting the OpenAI crew as setting out to save the world." According to Bender, Johnson portrayed the crew as someone "figure out the best way to steer A.I toward the most positive outcome possible", which demonstrates that Johnson stands with or even admire those crew member , some of whom also happen to be the leaders of the mega corporations that Johnson later criticized for monopoly in the AI area.