

Problem 1

Question 1: Our Mars rover has been out collecting samples, and it needs to return to the charging station as quickly as possible.

It knows that over rocky terrain it can go 2 km/h. Over sandy terrain it can go 3 km/h, and over smooth terrain it can go 5 km/h.

There are three routes it might choose from. Unfortunately, our terrain data for the three routes is incomplete, so we only have estimates.

Route 1 is 2 km long. There is a 20% chance it is sandy, 30% chance it is smooth, and a 50% chance it is rocky.

Route 2 is 1.8 km long. There is a 40% chance it is sandy, a 20% chance it is smooth, and a 40% chance it is rocky.

Route 3 is 3.1 km long. There is a 50% chance it is sandy, a 40% chance it is smooth, and a 10% chance it is rocky.

R1

$$\text{Sandy} = \frac{2}{3} * .2 = .13$$

$$\text{Smooth} = \frac{2}{5} * .3 = .12$$

$$\text{Rocky} = \frac{2}{2} * .5 = .5$$

$$= 0.753$$

R2

$$\text{Sandy} = 1.8/3 * .4 = .24$$

$$\text{Smooth} = 1.8/5 * .2 = .072$$

$$\text{Rocky} = 1.8 / 2 = .36$$

$$= .672$$

R3

$$\text{Sandy} = 3.1/3 * .5$$

$$\text{Smooth} 3.1 / 5 = .248$$

$$\text{Rocky} 3.1 / 2 = .155$$

$$= .92$$

Route 2 is the fastest.

Now which route should we pick? Show your work.

R1

$$\text{No crater} = .753$$

Crater = $.753 + .75 = 1.503$
 $.753 * .7 + 1.503 * .3 = .978$

R2
Bridge = $.672$
Bridge out = 1.672
 $.672 * .4 + 1.672 * .6 = 1.272$

R3
.92

R3 is now the quickest route.

Now suppose that we can use a satellite to find out whether the terrain in route 3 is smooth. Is this helpful? What is the value of this information? Expressed differently, how long are we willing to wait for this information from the satellite?

Smooth R3 = $3.1 / 5 = .62$
Noth Smooth R3 =
% of sandy = %
% of rocky = %
 $3.1 / 3 * \% + 3.1 / 2 * \%$
 $= 1.12$

If route 3 is smooth, we choose route 3. If it's not smooth, then we would choose R1. R1 has a 40% chance to be smooth and 60% chance to be not smooth.
 $.62 * .4 + .978 * .6 = .835$

Previous best - Best with satellite = time willing to wait
 $.92 - .835 = .085$
Yes, it is helpful. We are willing to wait .085 hours for this info.

Now put this problem into ChatGPT. Is it able to solve it correctly? If not, where does it make mistakes?

It isn't able to do the satellite question. It doesn't take into account the knowledge of the previous best R3 route.

Problem 3 - Belief Networks

2.

Given that the car will not move, what is the probability that the battery is not working?

0.359

Given that the radio is not working, what is the probability that the car will not start?

.8787

Given that the battery is working, does the probability of the radio working change if we discover that the car has gas in it?

No both are .75

Given that the car doesn't move, how does the probability of the ignition failing change if we observe that the car does not have gas in it?

No gas = .4822

With no observation of gas = .5666

What is the probability that the car starts if the radio works and it has gas in it?

.7212

Problem 4 - Grad

What are the three dimensions along which Big Tech has an advantage in AI?

The Data Advantage, Computing Power Advantage, Geopolitical Advantage.

Why does AI Now think it's important to focus on Big Tech?

In short, AI Now focuses on Big Tech because they are the most prominent players in this industry. Big tech has become increasingly ingrained into the daily lives of our society. Most of the prominent issues with tech policy, like invasive data collection and exacerbation of patterns of inequality and discrimination, can be linked to Big Tech. With the dominant industry stance of Big Tech, it's critical that we pay special attention that their overbearing influence doesn't bleed into future policies.

Priority 1 discusses Algorithmic Accountability. What does this mean? Why is it important to shift responsibility for detecting harm on companies themselves?

Algorithmic accountability is the idea that companies who design an algorithm should be responsible for its wrongdoings. Companies often blame faulty algorithms for their immoral actions or their failure to meet proper guidelines(Usually security). This is an increasingly prominent issue as we enter the era of AI, due to how difficult accountability can be when it comes to actions of an Artificial intelligence. Algorithmic accountability rightly suggests that AI companies should be held accountable for the actions of their AI products.

What are the windows for action that are identified? Which do you personally think are the most effective or promising?

The windows are areas in which AI Now believes policy can improve society's interaction with AI. Of the windows listed the two that stood out to me were building support for competition and strong curbs on biometrics/worker surveillance. With how prominent AI is becoming, there needs to be competition between multiple parties that allow users to choose which they prefer. As AI begins to replace search engines, it's easy for one company that monopolizes the industry to skew the information that AI gives out. For example, a company like OpenAI could have their LLM Chat-GPT not produce any negative outputs about OpenAI. While this is a minor thing currently, when applied to topics such as politics, this can quickly become censorship.

Do you agree with this assessment? How might we rethink our relationship with AI and with technology in order to avoid these potential negative outcomes?

I do agree with this quote. AI is a fad that is currently in the middle of the spotlight. That being said, we need to treat it like every other piece of technology and create policies allowing it to shine without causing problems. I think it's a powerful tool that can be leveraged to change how we learn and interact with data. However, due to the many complications with AI, we also need to ensure that this technology is adequately policed before we use it in large sectors of society.

GPT 3.5 answer

As an AI language model, I don't have personal opinions, but I can provide some insights into the assessment and offer suggestions on how we might rethink our relationship with AI and technology to address potential negative outcomes.

The quote you provided emphasizes that the impact of artificial intelligence (AI) is not inevitable, and it highlights the importance of considering the potential social, economic, and political consequences of AI technology. This assessment reflects a growing awareness of the need for responsible and ethical AI development and deployment.

To avoid potential negative outcomes associated with AI, we can consider the following approaches:

Ethical AI Development: Developers and organizations should prioritize ethical considerations throughout the AI development process. This includes ensuring fairness, transparency, and accountability in AI algorithms and decision-making systems.

Inclusive Decision-Making: Involve diverse stakeholders, including ethicists, social scientists, and representatives from marginalized communities, in the decision-making processes related to AI development and deployment. This can help identify potential biases and address them early in the development cycle.

Regulation and Governance: Governments and regulatory bodies can play a crucial role in establishing guidelines and regulations for AI technologies to ensure they are used in ways that benefit society and do not harm vulnerable populations.

Education and Awareness: Promote AI literacy and awareness among the general public, policymakers, and business leaders. A better understanding of AI can lead to more informed decision-making and responsible use of AI technologies.

Data Privacy and Security: Strengthen data privacy and security measures to protect individuals' personal information and prevent unauthorized access to AI systems.

Social Safety Nets: As AI may disrupt certain job markets, consider the implementation of safety nets, such as job retraining programs, to help workers transition to new roles or industries.

Continuous Monitoring and Evaluation: Regularly assess the impact of AI technologies on society and be willing to make necessary adjustments to mitigate negative consequences.

Ethical AI Business Models: Encourage business models that prioritize long-term societal benefits over short-term profits and consider the broader impact of AI on society.

Ethical AI Research: Encourage research into AI technologies that prioritize ethical and responsible applications, as well as research on the potential risks and biases associated with AI systems.

Public Engagement: Engage the public in discussions and decision-making processes related to AI technologies to ensure that their concerns and values are considered.

In summary, rethinking our relationship with AI and technology requires a multi-faceted approach that combines responsible development, ethical considerations, regulation,

education, and ongoing evaluation. By taking these steps, we can work towards harnessing the benefits of AI while minimizing its potential negative impacts on society.

Comparison to my own.

It's a much more detailed answer that conveys a very similar idea that AI is a powerful tool that needs to be ethically monitored and policed.