

Question 1

Q.1. Route 2 is the best route.

Route	Route 1	Route 2	Route 3
Expected travel time (hours)	0.754	0.672	0.920

Q.2. Route 3 is now the best route.

Route	Route 1	Route 2	Route 3
Expected travel time (hours)	0.979	1.272	0.920

Q.3. We should wait up to 16 minutes to receive this information.

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Q.1) $v_{rocky} = v_R = 2 \text{ km/h}$
 $v_{sandy} = v_S = 3 \text{ km/h}$
 $v_{smooth} = v_{sm} = 5 \text{ km/h}$

Route	length	Probabilities		
		Sandy	Smooth	Rocky
Route 1	2 km	20%	30%	50%
Route 2	1.8 km	40%	20%	40%
Route 3	3.1 km	50%	40%	10%

Expect travel time for a route:

$$E(R) = \sum \frac{P_{env} \times L_{route}}{v_{env}}, \text{ where } P_{env} = \text{Probability of a certain terrain}$$

$L_R = \text{length of route}$
 $v_{env} = \text{Velocity on that terrain}$

$$E(R_1) = \frac{P_R \times L_{R1}}{v_R} + \frac{P_S \times L_{R1}}{v_S} + \frac{P_{sm} \times L_{R1}}{v_{sm}}$$

$$= L_{R1} \left(\frac{P_R}{v_R} + \frac{P_S}{v_S} + \frac{P_{sm}}{v_{sm}} \right) = 2 \text{ km} \left(\frac{0.5}{2 \frac{\text{km}}{\text{h}}} + \frac{0.2}{3 \frac{\text{km}}{\text{h}}} + \frac{0.3}{5 \frac{\text{km}}{\text{h}}} \right)$$

$$E(R_1) = 2 \times (0.25 + 0.067 + 0.06) = 0.754 \text{ hours}$$

$$E(R_2) = 1.8 \times \left(\frac{0.4}{2} + \frac{0.4}{3} + \frac{0.2}{5} \right) = 0.672 \text{ hours}$$

$$E(R_3) = 3.1 \times \left(\frac{0.1}{2} + \frac{0.5}{3} + \frac{0.4}{5} \right) = 0.920 \text{ hours}$$

Route 2 is the best route as it has the lowest expected travel time

Q.2) $P_{\text{damaged}} = 30\%$, $T_{\text{damaged}} = 0.75 \text{ hours}$

$$E(R_1)^* = E(R_1) + (P_{\text{damaged}} \times T_{\text{damaged}}) + (P'_{\text{damaged}} \times T'_{\text{damaged}})$$

$$= 0.754 \text{ h} + (0.3 \times 0.75) + (0.7 \times 0)$$

$$= 0.979 \text{ h}$$

Q2) Route 2:
 $P_{\text{damaged}} = 0.6$, $T_{\text{damaged}} = 1 \text{ h}$
 $E(R_2)^* = E(R_2) + (P_{\text{damaged}} \times T_{\text{damaged}})$
 $= 0.672 + (0.6 \times 1)$
 $= 1.272$

Route	R_1	R_2	R_3
$E(R)$	0.979h	1.272h	0.920h

With this new information, R_3 is the best route.

Q3) Current expected travel time:
 $E(R_3) = 0.920 \text{ h}$
 Need to find Value of Information
 $VoI = \text{Expected Time saved if terrain is smooth}$
 $E(R_{3 \text{ satellite}}) = \frac{P_{\text{smooth}} \times L_{R_3}}{V_{\text{smooth}}} + \frac{P_{\text{rough}} \times (L_{R_3} \times \frac{1}{V_{\text{rough}}} + L_{R_2} \times \frac{1}{V_{\text{rough}}})}{2}$
 $= \frac{0.4 \times 3.1}{5} + 0.6 \times \left(\frac{3.1}{2} + \frac{3.1}{3} \right)$
 $VoI = E(R_3) - E(R_{3 \text{ satellite}})$
 $E(R_{3 \text{ satellite}}) = \frac{P_{\text{smooth}} \times L_{R_3}}{V_{\text{smooth}}} + (E(R_{3 \text{ not smooth}}) \times P'_{\text{smooth}})$
 $E(R_{3 \text{ not smooth}}) = \frac{P_3 \times L_{R_3}}{V_3} + \frac{P_1 \times L_{R_3}}{V_1} = 3.1 \left(\frac{0.5}{3} + \frac{0.1}{82} \right)$
 $= 0.672 \text{ h}$
 $E(R_{3 \text{ satellite}}) = \frac{0.4 \times 3.1}{5} + 0.6 \times 0.672$
 $= 0.248 + 0.4032 = 0.6512 \text{ h}$
 $\therefore, VoI = 0.920 \text{ h} - 0.6512 = 0.2688 \text{ h}$
 $VoI = 16 \text{ minutes}$

Q.4.

I put this problem into ChatGPT minus the milestone portions. It was almost immediately wrong. It listed out all the information correctly, but got $E(R_1)$ wrong:

“Expected travel time for Route 1: $(0.20 \times 2 \text{ km}) / 3 \text{ km/h} + (0.30 \times 2 \text{ km}) / 5 \text{ km/h} + (0.50 \times 2 \text{ km}) / 2 \text{ km/h} = 0.4 \text{ hours or 24 minutes}$ ”

Similarly, it wrote the equation right for $E(R_2)$ and $E(R_3)$, but got the values wrong.

It proceeded to get the second part of the problem incorrectly as well:

“Expected travel time for Route 1 with damaged crater wall: $0.30 * 0.75$ hours + $0.70 * 0.4$ hours = 0.225 hours or 13.5 minutes

...

Now, considering this additional information, Route 1 still has the shortest expected travel time, even with the possibility of a damaged crater wall. So, we should still pick Route 1.”

Finally, it did not calculate the Value of Information correctly either and instead claimed it depends on more information that is not clearly defined:

“Since Route 3 has the longest expected travel time of 93 minutes, knowing the terrain type in advance can potentially save us time. However, the exact value of this information depends on various factors, such as the urgency of the mission and the potential consequences of choosing the wrong route.

If the mission's success is critical and the consequences of choosing the wrong route are severe, we may be willing to wait for this information for some time. However, we would need to weigh the potential time savings against the cost of waiting and the importance of completing the mission quickly.

Ultimately, the value of the satellite information depends on the specific circumstances of the mission and the trade-offs between time, risk, and cost.”

Question 3

Q.1. What are the three dimensions along which Big Tech has an advantage in AI?

Big Tech’s advantage in AI plays out along the following three dimensions:

1. A data advantage – Big Tech has access to the largest and most specific datasets that can be used to gain insights into the behavior of their consumers. Their embedding into every facet of society gives them an inconceivable amount of proprietary data.
2. Computing power advantage – AI requires huge amounts of data and computing power to train and deploy, and with Big Tech’s economies of scale, only they generally have the pool of skilled workers and resources to manage this kind of infrastructure. As a result, smaller start-ups or companies need to rely on their competitors for this critical infrastructure, which Big Tech companies can wield to snuff out competition – something that is already happening. Additionally, a lot of these startups’ ultimate goal is to be bought out by Big Tech, leading to a positive feedback loop where Big Tech accumulates innovations in tech. Big Tech also conducts strategic acquisitions to absorb and snuff out competition.
3. Geopolitical advantage – AI models have been shifting more and more to being perceived as assets vital to national security instead of general products. This has led to a space-race, but for AI, which means the development of these models are being accelerated instead of restrained. Pouring resources into developing AI means the companies that are able to work with huge amounts of compute and data – the Big Tech companies – are

increasingly protected and enriched by the government, leading to a trickle-up situation where resources, technology and power are held by a few companies.

Q.2. Why does AI Now think it's important to focus on Big Tech?

AI Now thinks it's important to focus on Big Tech because:

1. Policy interventions against Big Tech will positively affect several challenges that are started or compounded by Big Tech practices, such as invasive data gathering, manipulating autonomy of groups and individuals, monopolization of economic and technological resources, and exacerbating inequality and discrimination.
2. Big Tech's internal business and regulatory playbook sets the tone and compels other companies to copy them to survive. For example, the commodification of consumer data to fuel behavioral advertising as a business model by Google and Facebook. Another example is Apple charging app developers to publish apps on their store, something that Google, PlayStation, Microsoft, Samsung, etc. have all copied.
3. Big Tech companies providing critical services creates a single point of failure for these services. The aim of big, profit-driven companies in general to create a monopoly and be the sole provider of their service is mirrored by Big Tech. Since Big Tech moves faster than the government on average, the government also increasingly depends on Big Tech infrastructure and resources, which only increases the cost of failure when it does happen. Several people and businesses depend on Big Tech for deliveries, identification, healthcare, food production, internet, and so on. If any Big Tech companies providing such infrastructure fails, it could be catastrophic, something which has already been seen innumerable times with data breaches alone.

Q.3. Priority 1 discusses Algorithmic Accountability. What does this mean? Why is it important to shift responsibility for detecting harm on companies themselves?

Algorithmic Accountability refers to the stance that entities designing algorithmic software must be held responsible for any unforeseen societal harms caused by them, and that the onus of determining the knock-on effects of their algorithms should lie with the entities themselves. This is important because Big Tech frequently depends on third-party evaluations, which means they can shift the blame of the harm they caused with their algorithms onto a third party. It is also important because when the general public roots out the harm caused by these algorithms, their negative effects are already deeply felt. This is especially important considering the increasingly central positioning of Big Tech services and infrastructure.

Q.4. What are the windows for action that are identified? Which do you personally think are the most effective or promising?

There are several windows for action:

1. Contain tech firms' data advantage.
2. Build support for competition reforms as a key lever to reduce concentration in tech.
3. Regulate ChatGPT and other large-scale models.

4. Displace audits as the primary policy response to harmful AI.
5. Future-proof against the quiet expansion of biometric surveillance into new domains like cars.
6. Enact strong curbs on worker surveillance.
7. Prevent “international preemption” by digital trade agreements that can be used to weaken national regulation on algorithmic accountability and competition policy.

I think the window which would give the most benefit in the short-term while setting the tone for the long-term would be regulating ChatGPT and other large-scale models. Currently, it is these large-scale models that are most widely used, the biggest beneficiaries from the asymmetric conditions of the AI development phase, and therefore the most impactful negatively to society at large. Understanding the risks would allow us to contain its knock-on effects and improve our ability to understand risks of future models, and mandating documentation means developers are held accountable for their models, and increases the chance that datasets will be better curated and more representative of all populations.

Q.5. The executive summary contains this quote:

"These are only a handful of examples, and what they make clear is that there is nothing about artificial intelligence that is inevitable. Only once we stop seeing AI as synonymous with progress can we establish popular control over the trajectory of these technologies and meaningfully confront their serious social, economic, and political impacts—from exacerbating patterns of inequality in housing, credit, healthcare, and education to inhibiting workers’ ability to organize and incentivizing content production that is deleterious to young people’s mental and physical health."

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 assessment. It is quite human to play with things we do not fully understand and deal with the problems later. When these tools become bigger and more impactful, its changes on our world will be harder to predict and more impactful. We still do not really understand the widespread past and ongoing impacts of social media and the internet on our world.

A good start to changing our relationship with AI and technology would be to put a great deal more resources into understanding its impacts before something is deployed and holding businesses accountable for their software’s actions. Something which I think would help a great deal is to remove profit as the primary motivator for advancing technology, something which is much easier said than done considering most of the world’s capitalist economic system, and something I would not know how to go about. Comprehensive policy change and international coordination is the only way we can attempt to control or change this relationship. Something else I think would help is to remove critical infrastructure from the hands of a few companies, which, again, is something much easier to say than implement.

- Now paste this last question into ChatGPT and include its response. How do you compare its output to your own?

I generally agree with ChatGPT's response, and think it is more comprehensive and detailed than my own.

ChatGPT response:

The assessment provided in the quote highlights important concerns about artificial intelligence and its potential negative impacts on various aspects of society. While I am an AI language model and do not hold personal opinions, I can provide insights into the assessment and offer potential ways to rethink our relationship with AI and technology to address these concerns.

1. **Recognizing AI as a Tool, Not Inevitable Progress:** It is essential to view AI as a tool or a set of technologies rather than as an inevitable path to progress. This perspective allows us to approach AI with a critical eye, understanding that its deployment should be guided by ethical and societal considerations rather than simply pursuing technological advancement for its own sake.
2. **Ethical and Inclusive Development:** We should prioritize the ethical and inclusive development of AI technologies. This involves considering the potential impacts on marginalized communities, addressing biases in AI algorithms, and involving diverse voices in the design and decision-making processes.
3. **Regulation and Oversight:** Governments, regulatory bodies, and industry organizations should play a proactive role in establishing guidelines and regulations for AI deployment. This can help prevent the exacerbation of inequalities and ensure responsible AI use.
4. **Education and Awareness:** Promoting AI literacy among the general public is crucial. People need to understand AI's capabilities, limitations, and potential consequences to make informed decisions about its use and demand accountability from AI developers and providers.
5. **Data Privacy and Security:** Strengthening data privacy and security measures is essential to protect individuals' information from misuse and breaches. Clear data protection regulations can help safeguard against potential harm.
6. **Supporting Workers and Organizing:** As AI and automation technologies advance, we should support workers by providing opportunities for upskilling and reskilling. Additionally, policies and mechanisms for workers to organize and advocate for their rights in the face of AI-driven changes in the workplace are crucial.
7. **Promoting Positive Content and Mental Health:** Encouraging AI systems and platforms to prioritize content that is beneficial for mental and physical health, especially for young people, can help mitigate some of the negative impacts of AI on content production and consumption.
8. **Continuous Evaluation and Adaptation:** The landscape of AI is continuously evolving. Therefore, we must continually evaluate and adapt our approach to AI governance and regulation to address emerging challenges and ensure that AI technologies align with societal values and goals.

In summary, rethinking our relationship with AI and technology involves adopting a more critical and ethical perspective. It requires a multifaceted approach that includes responsible development, regulation, education, and a commitment to addressing potential negative consequences. By doing so, we can harness the benefits of AI while mitigating its adverse effects on society.