

Intro to AI: Paper work 5

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Q1:

1.

$$a. R1 = 0.2 \times \frac{2}{3} + 0.3 \times \frac{2}{5} + 0.5 \times \frac{2}{2} = \frac{0.4}{3} + \frac{0.6}{5} + 0.5 = \frac{11.3}{15} \text{ (hr)}$$

$$R2 = 0.4 \times \frac{1.8}{3} + 0.2 \times \frac{1.8}{5} + 0.4 \times \frac{1.8}{2} = 0.24 + \frac{0.36}{5} + 0.36 = \frac{10.08}{15} \text{ (hr)}$$

$$R3 = 0.5 \times \frac{3.1}{3} + 0.4 \times \frac{3.1}{5} + 0.1 \times \frac{3.1}{2} = \frac{1.55}{3} + \frac{1.24}{5} + \frac{0.31}{2} = \frac{13.995}{15} \text{ (hr)}$$

we should take route 2 which takes the least time

b.

$$R1 = \frac{11.3}{15} + 0.3 \times \frac{45}{60} = \frac{11.3}{15} + \frac{0.9}{4} = \frac{45.2 + 13.5}{60} = \frac{58.7}{60} \text{ (hr)}$$

$$R2 = \frac{10.08}{15} + 0.6 \times 1 = \frac{10.08}{15} + 0.6 = \frac{40.32 + 36}{60} = \frac{76.32}{60} \text{ (hr)}$$

$$R3 = \frac{55.18}{60} \Rightarrow \text{we should take route 3}$$

c.

$$\text{original: } \frac{55.18}{60} \quad \text{if smooth: } \frac{3.1}{5} = 0.62 = \frac{37.2}{60}$$

$$\text{If not smooth: } \frac{5}{6} \times \frac{3.1}{3} + \frac{1}{6} \times \frac{3.1}{2} = \frac{31 + 9.3}{36} = \frac{40.3}{36} = \frac{67.17}{60}$$

Assume it take t hr

$$\text{smooth: } \frac{37.2}{60} + t \leq \frac{55.18}{60} \Rightarrow t = \frac{17.98}{60} \text{ within } \frac{17.98}{60} \text{ hr would be helpful}$$

$$\text{!smooth: } \frac{67.17}{60} \geq \frac{58.7}{60} + t \Rightarrow t = \frac{8.47}{60} \text{ we would choose R1 if we}$$

know R3 is not smooth so within $\frac{8.47}{60}$ hr would be worth waiting

$$0.4 \times \frac{17.98}{60} + 0.6 \times \frac{8.47}{60} = \frac{7.192 + 5.082}{60} = \frac{36.55}{60} \text{ hr (expected utility)}$$

ChatGPT:

Part 1:

To determine which route is the fastest, we can calculate the expected time it will take to complete each route and choose the one with the shortest expected time.

For Route 1:

– Expected time = $(0.2 * 3 + 0.3 * 5 + 0.5 * 2) = 2.7$ hours

It didn't realize the given numbers were speed and didn't transfer them to time.

For Route 2:

– Expected time = $(0.4 * 3 + 0.2 * 5 + 0.4 * 2) = 2.6$ hours

For Route 3:

– Expected time = $(0.5 * 3 + 0.4 * 5 + 0.1 * 2) = 3.3$ hours

Therefore, Route 2 is the fastest, with an expected time of 2.6 hours.

Part 2:

For Route 1, there is a 30% chance of adding 45 minutes to our journey, which increases the expected time to:

– Expected time = $0.7 * 2.7 + 0.3 * (2.7 + 0.75) = 2.775$ hours

The logic is correct, but the same mistake as part 1

For Route 2, there is a 60% chance of adding 1 hour to our journey, which increases the expected time to:

– Expected time = $0.4 * 3 + 0.2 * 5 + 0.4 * (2 + 1) = 3$ hours

For Route 3, we can now use the satellite to check if it is smooth. If it is smooth, we can travel at 5 km/h, which would reduce the expected time to:

– Expected time = $0.5 * 1.55 + 0.4 * 5 + 0.1 * 2 = 2.12$ hours

If it is not smooth, we can travel at 3 km/h, which would increase the expected time to:

– Expected time = $0.5 * 1.55 + 0.4 * 3 + 0.1 * 2 = 1.77$ hours

Therefore, if we can wait up to 0.53 hours (approximately 32 minutes) for the satellite to provide the terrain information, it would be valuable to use it to determine whether Route 3 is smooth or not.

Q4:

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

A. Data advantage: like google, the more you use their search engine and ChatGPT, the more data they can collect. And developing AI requires tremendous data for training purpose.

Computing power advantage: AI development heavily rely on substantial computing power, materials, and labor, which only big tech has the access to these resources. Some even started to restricting the resources to throttle competition.

Geopolitical advantage: AI is becoming a competition among nations. Like military was in the 18s and 19s. In other words, governments will focus on and even sponsor big tech for developing AI. They may be easy on big tech when it comes to legal issue.

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

A. Many challenges originate from big tech. By tackling those challenges, numerous root causes of some key concerns can be addressed, such as invasive data surveillance.

Smaller companies usually look up to big ones so as long as big tech behave well, it compels and incentivizes small companies to behave in the similar way, vice versa.

The society relies more and more on big tech no matter tech companies or the public. A small decision make from big tech can greatly influence the whole world. It's important to pay more attention on big tech.

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

A. The accountability for those consequence made by algorithmic decision. It relied on third-party surveillance to point out or handle the consequences that made from big companies, which is costly and sometimes hard to detect. Therefore, those companies should take the responsibility for handling the consequences that made by themselves.

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

A. Contain tech firms' data advantage, build support for competition reforms as a key lever to reduce concentration in tech, regulate ChatGPT and other large-scale models, displace audits as the primary policy response to harmful AI, future-proof against the quiet expansion of biometric surveillance into new domains like cars, enact strong

curbs on worker surveillance, prevent international preemption by digital trade agreements that can be used to weaken national regulation on algorithmic accountability and competition policy.

Personally, I don't think regulation to be a good idea since regulations are usually created after disasters occurred. Therefore, I think supporting competition reforms to be the best way. First of all, it can weaken the impact made from big tech, reducing the harms. Second, with competition, companies will try to keep themselves from making mistakes and harming the community since it would be difficult to survive with bad reputation.

- The executive summary contains this quote:

A. In my opinion, I agree with the assessment. We should stop thinking AI to be an almighty tool and blindly trying to achieve everything with AI. Instead, we should prioritize those issue that we care and focus more, such as ethical consideration, and human-centered purposes, etc. Take ChatGPT for example, instead of seeing ChatGPT as a tool that can answer all the questions, we should take it as a reference and don't take it as 100% correct. I believe we can avoid many negative outcomes if we stop blindly develop AI.

Comparison: I think the answer of ChatGPT is quite similar to mine. Instead of worrying about the negative impacts that AI may bring, we should focus on what we hope AI to do and see AI as a tool that can auxiliary us to achieve goals.

ChatGPT:

As an AI language model, I don't have opinions or beliefs, but I can provide you with some insights on the topic.

The statement highlights an important point that artificial intelligence is not an inevitable force of nature that we have no control over. Instead, the development and use of AI technologies are shaped by societal values, politics, and economic interests. Therefore, it is crucial to establish popular control over the trajectory of these technologies to confront their potential negative impacts.

One way to rethink our relationship with AI is to prioritize ethical considerations in the development and deployment of these technologies. This means ensuring that AI systems are transparent, explainable, and accountable, and that they do not perpetuate or exacerbate existing biases and inequalities.

Another way is to prioritize human-centered design that takes into account the social and economic implications of AI technologies. For instance, we can prioritize the development of AI tools that enhance workers' abilities to organize, rather than replacing them. We can also ensure that AI systems do not incentivize harmful content production or restrict access to essential services such as healthcare and education.

Moreover, establishing democratic and participatory processes in AI governance can help ensure that these technologies serve the common good rather than narrow interests. This includes engaging diverse stakeholders, such as community groups, civil society organizations, and marginalized groups, in shaping the development and deployment of AI technologies.

In summary, rethinking our relationship with AI requires prioritizing ethical considerations, human-centered design, and democratic governance. These steps can help us avoid the potential negative impacts of AI technologies and ensure that they serve the common good.