

2024 年度 消費情報環境法学科

## 英 語

〔自己推薦 A O (A)〕 14-J 1

### 注 意

1. 監督者の合図があるまで問題冊子は開かないでください。
2. 解答はすべて解答用紙のきめられた箇所に記入してください。

[ I ] AI (人工知能) の可能性について書かれた以下の文章を読み、設問に答えなさい。

Could AI power robots to pick plastic out of the oceans? Or help resolve the other pressing problems such as climate change?

While large language models — the basis of tools such as ChatGPT — have taken the limelight lately, AI algorithms are already being used in the fight against climate change, biodiversity decline and pollution. “Most AI isn’t flashy,” says David Rolnick, co-founder and chair of nonprofit Climate Change AI. He detailed five uses of the technology in this arena:

Distilling large datasets into usable information, including scanning satellite imagery for evidence of deforestation. Improving forecasts, such as predicting energy demand and renewable supply for electricity grids. Optimizing complicated systems, to reduce the energy required ( ① ) heat and cool buildings or make industrial processes more efficient. ( ② ) climate modeling. Speeding up scientific discoveries, like suggesting better battery materials to hasten experimentation. AI algorithms are already being widely used, including in — yes — ocean-cleaning efforts (there are even robots). But ( ③ ) AI has made the process efficient and autonomous, there are limitations.

The Ocean Cleanup project is probably one of the best-funded and well-known marine-plastic undertakings. It’s developed an AI tool to detect and map plastic objects at sea, to better deploy cleanup resources. <sup>(1)</sup> Meanwhile, Hong Kong-based startup Open Ocean Engineering has developed Clearbot, <sup>(2)</sup> a little solar-powered robot which can collect trash and clean up oil spills from urban waterways. Capable ( ④ ) picking up to 200 kilograms of debris per mission, it uses AI to record and categorize the waste it’s collected.

But even if the algorithms work perfectly, how you choose to use the matters — and there ( ⑤ ) plenty of well-documented issues with these projects. The Ocean Cleanup, for example, has simply re-invented trawl fishing, but for plastic. That comes with risks for ocean life and biodiversity — the very thing it’s trying to save.

By its own estimates, tens of thousands of small sea creatures such as crustaceans, fish, jellyfish and squid could potentially get caught in the nets even when the system is used at its slowest speed. During the first 12 trips of its trawl-net system to the Great Pacific Garbage Patch, The Ocean Cleanup caught 193,832 kg of plastic along with 667 kg of so-called bycatch, consisting mostly ( ⑥ ) fish, sharks, mollusks and sea turtles. While that's a lot more plastic than marine life, there's a cost-benefit analysis to consider. What's more, the huge nets are towed by diesel-powered ships, making the process extremely carbon intensive.

An even bigger issue is that these efforts are ( ⑦ ) making a dent in the problem. At least 14 million tons of plastic end up in the ocean every year. At the current rate, (⑦ predicted / ① plastic / ㊦ 2050 / ㊥ will / ㊦ fish / ㊦ it's / ㊦ outweigh / ㊦ that / ㊦ by). <sup>(3)</sup> According to its data dashboard, The Ocean Cleanup has so far ( ⑧ ) about 3,300 tons of the stuff.

Ultimately, a global legally-binding treaty, like the one that was to be hashed out in Paris, will make the biggest difference to the plastic problem by tackling it at source rather than remedying the symptoms. "The hardest thing often in technology is listening to what's needed and building what's needed, rather than what you think is needed," <sup>(4)</sup> says Rolnick. "It can't be technology coming in and saving the day. It has to be a combination of people with technological tools, people with on the ground expertise and communities who are ( ⑨ ) by the technology."

AI is helping elsewhere. National Grid ESO, Britain's electricity system operator, is using AI to ( ⑩ ) the accuracy of its electricity demand forecasts, enabling better integration of renewable energy. Rolnick has been involved in creating tools for automated insect sensors to help accelerate and expand the collection of biodiversity data around the world. The pay-off has already been huge: In Panama, the system helped entomologists identify 100 species that were new to science.

The moral of the story is that artificial intelligence isn't going to magically fix our problems, and the futuristic option isn't always the most effective choice. But, used intelligently and sensitively, machine learning can be harnessed to bolster people power

in the battle to save the planet.

[単語解説]

algorithms：アルゴリズム（計算方法），biodiversity：生物多様性，co-founder：共同創設者，nonprofit：非営利団体，satellite imagery：衛星画像，deforestation：森林伐採，electricity grids：電力網，optimize：最適化する，The Ocean Cleanup：団体の名前（非営利団体），deploy：配備する，Open Ocean Engineering：企業の名前，Clearbot：ロボットの名前，oil spills：漏出石油，debris：破片，trawl fishing：底引き網漁，crustaceans：甲殻類，jellyfish：クラゲ，Great Pacific Garbage Patch：太平洋ゴミベルト，bycatch：混獲物（意図せずに漁獲してしまう物のこと），mollusk：軟体動物，tow：牽引する，carbon intensive：二酸化炭素排出量の多い，make a dent：少し進歩する，treaty：協定，remedy：改善する，symptoms：症状，National Grid ESO：企業の名前，entomologists：昆虫学者，harness：利用する，bolster：強化する

出典：Lara Williams, AI robots can't clean the world's plastic-plagued oceans alone, The Japan Times, July 1-2, 2023, p.8. (抜粋)

問1 ①～⑩に入れる最も適切な語句を，それぞれ示された選択肢の中から一つ選んで書きなさい。

- |                                 |   |
|---------------------------------|---|
| ① (in, to, for)                 | ② (Accelerated, Accelerate, Accelerating) |
| ③ (while, when, because)        | ④ (of, on, as)                            |
| ⑤ (is, are, was)                | ⑥ (of, for, to)                           |
| ⑦ (only, surely, barely)        | ⑧ (to catch, catching, caught)            |
| ⑨ (affecting, affected, affect) | ⑩ (double, reduce, perform)               |

問2 下線部(1)を日本語に訳しなさい。

問3 下線部(2)がどのようなロボットか、問題文中に書かれていることを日本語で説明しなさい。

問4 下線部(3)について、「今のペースでは、2050年までにプラスチックが魚を上回るだろうと予測されている。」という意味になるように、㊦から㊫を適切に並び替え、㊦から㊫の記号で答えなさい。

問5 下線部(4)を日本語に訳しなさい。

問6 AI ロボットを用いれば、プラスチックで汚染された海を簡単にきれいにできるというわけではない。The Ocean Cleanup（オーシャン・クリーンアップ、非営利団体）の活動からわかった問題点について100字程度の日本語で説明しなさい。

[Ⅱ] 次の日本語の文章の意味になるように、括弧内に書かれているアルファベットから始まる適切な英単語を書きなさい。

- (1) この大学が設立されてから150年以上経つ。

It has been more than 150 years [s            ] this university was founded.

- (2) 子供の頃、私はよく本を読んでいた。

I [u            ] to read books when I was a child.

- (3) 私が好きなことをするのを妨げるものは何もない。

Nothing can [p            ] me from doing what I like.

- (4) 環境法に関する論争の多くが、実は科学に関する論争であることは驚くにはあたらない。

It is not [s            ] that many disputes about environmental law are really disputes about science.

- (5) 喫煙は健康に悪いという事実は誰も否定できない。

No one can deny the [f            ] that smoking is bad for your health.

[Ⅲ] 次の文章を英語に訳しなさい。

- (1) 私たちはとても疲れていたので、車ではなく電車で旅行することにした。

- (2) 私たち一人ひとりが、地球を守るために何ができるかを考える必要がある。

- (3) 法律の勉強ほどおもしろいものはない。