**2025高考英语一轮复习外刊阅读与词汇专练**

**专题10 电网要崩溃？AI先知道！**

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**【精编·外刊阅读】**

**AI can predict tipping points for systems from forests to power grids**

**（文章来源：New Scientist）**

**文中红色粗体为课标词，下面有专门的高频课标词训练和课标词梳理表格**

[A] AI can **predict** when complex **systems** like forests, animal populations or the **power** grid will suddenly start behaving very differently. Identifying such **tipping points** may help **prevent** catastrophic **collapses** in biology or human **systems**.

[C] To make **predicting** such transitions more **precise**, Gang Yan at Tongji University in China, and his colleagues combined two different **types** of **artificial** intelligence called neural **networks**. They improved the first one to understand the **functioning** of and **connections** across **systems** structured like large **networks** with many nodes. For example, in an **ecosystem**, each node would be a **regional** **location** where researchers would collect **data** about how many animals or trees live there. Nodes could also be different **parts** of the **power** grid or areas where **disease** outbreaks are **occurring**.

[D] The team **designed** the second neural **network** to be especially good at analysing how **networks** change over time. So, the first **network** would **process** **data** about each node and the **interactions** between them, then feed into the second **network**, which **detected** **patterns** in **data** that repeat over time and **predicted** future **tipping points**.

[E] Yan says that past studies **focused** on **identifying** particular **features** of **data** that increased or **decreased** as a **tipping point** approached, but his team’s AI goes **further**. “It **aims** to **identify** the **specific** conditions that lead to **system** **collapse**, stating: ‘Watch out, if the **system** reaches this [**specific**] condition, it will **collapse** **immediately**’,” he says.

[F] He and his **colleagues** tested the AI on a **range** of mathematical models and simulated **data** used to **represent** **power** grids, **crop** harvests and animal populations. In one test, they used 20 years of real-world **data** on vegetation and **rainfall** in a forest **ecosystem** in Central Africa that **suddenly** became a grass land. The researchers trained the AI on simulations and the scarce **data** available for one **part** of the **region**, and then had it **predict** the value for **annual** **rainfall** at the **tipping point** for another. The AI correctly **predicted** what had **actually** happened to the **ecosystem**, even when it was only given **data** for about 10 **per** cent of the nodes to learn from.

**【原创 阅读理解】**

1. What can AI predict in complex systems like forests or power grids?

A. When systems like forests will collapse.

B. When systems like forests will behave abnormally.

C. How systems like forests will adapt to changes.

D. How systems like forests will recover.

1. How is data from the first network used by the second network?

A. To track data.

B. To check data.

C. To find patterns.

D. To store patterns.

1. How might this AI system contribute to preventing real-world disasters?

A. By predicting natural disasters accurately.

B. By finding conditions that lead to collapse.

C. By alerting authorities to potential failures.

D. By controlling systems during emergencies.

1. What is the central conclusion drawn from the AI's testing results?

A. The AI could not predict collapses.

B. The AI boosted the efficiency of the systems.

C. The AI depended on large datasets.

D. The AI successfully identified tipping points.

【答案】BCBD

【导语】这是一篇说明文，探讨了AI在预测复杂系统（如森林、动物种群或电网）异常行为方面的能力。文章详细描述了研究团队如何利用神经网络改进AI预测系统，以及这些技术在实际应用中的效果。

1. **细节理解题。**根据文章开头的描述“AI can predict when complex systems like forests, animal populations or the power grid will suddenly start behaving very differently”（AI可以预测复杂系统，如森林、动物种群或电网，何时会突然表现出非常不同的行为），可以确定AI的主要功能是预测系统的异常行为。故选B。
2. **细节理解题。**文章中提到“the first network would process data about each node and the interactions between them, then feed into the second network, which detected patterns in data that repeat over time and predicted future tipping points”（第一个网络处理每个节点的数据及其相互作用，然后将其传输到第二个网络，后者检测数据中随着时间重复的模式并预测未来的临界点），可以看出，第二个网络使用第一个网络的数据来找到模式。故选C。
3. **推理判断题。**根据文章中的信息“‘It aims to identify the specific conditions that lead to system collapse, stating: ‘Watch out, if the system reaches this [specific] condition, it will collapse immediately’’”（它旨在识别导致系统崩溃的具体条件，指出“注意，如果系统达到这种[特定]条件，它将立即崩溃”），可以推断出AI系统通过发现导致崩溃的条件来帮助预防实际灾难。故选B。
4. **主旨大意题。**文章最后提到“the AI correctly predicted what had actually happened to the ecosystem, even when it was only given data for about 10 per cent of the nodes to learn from”（AI正确地预测了生态系统的实际情况，即使它只获得了大约10%的节点数据来学习），表明AI在测试中成功识别了临界点，验证了其有效性。故选D。

**【原创 语法填空】**

AI can predict when complex systems, like forests, animal populations, or power grids, might suddenly start behaving in unexpected ways, which is essential for preventing major breakdowns \_\_\_\_1\_\_\_\_ both natural and human-made systems.

To improve the accuracy of these predictions, Yan and his team combined two types of neural networks. The first network \_\_\_\_2\_\_\_\_ (design) to understand how systems with many connected parts work, \_\_\_\_3\_\_\_\_ each part could represent a location that gathers information on animal or tree \_\_\_\_4\_\_\_\_ (population), or could be different sections of the power grid or areas affected by disease.

The second neural network is particularly skilled at analyzing \_\_\_\_5\_\_\_\_ these systems change over time. It takes the information \_\_\_\_6\_\_\_\_ (process) by the first network to find patterns that repeat and predict when a tipping point might occur.

Yan explains that while \_\_\_\_7\_\_\_\_ (early) research mainly looked at certain data trends as a tipping point neared, their AI goes further by identifying the exact conditions that cause a system \_\_\_\_8\_\_\_\_ (fail), giving a clear warning: ‘If the system reaches this specific state, it \_\_\_\_9\_\_\_\_ (collapse) right away.’

This AI was tested on different models and simulated data, including 20 years of real-world data on vegetation and rainfall in a Central African forest that suddenly turned into \_\_\_\_10\_\_\_\_ grassland. Even with limited data, the AI accurately predicted when the ecosystem would reach its tipping point.

【答案】

| 1. in | 2. was/is designed | 3. where | 4. populations | 5. how |
| --- | --- | --- | --- | --- |
| 6. processed | 7. earlier | 8. to fail | 9. will collapse | 10. a |

【导语】本文是一篇说明文，介绍了Yan和他的团队如何利用AI预测复杂系统的行为变化，特别是当这些系统接近崩溃点时。文章详细描述了AI如何通过结合两种神经网络来提高预测准确性。

1. **考查介词**。句意：“这对于防止自然和人为系统的重大崩溃至关重要。”此处介词“in”与“both...and...”搭配，表示“在……方面”，故填in。
2. **考查时态和语态**。句意：“第一个网络旨在理解具有许多连接部分的系统如何工作。”设计是被动动作，因此使用一般现在时的被动语态，故填is designed。此题亦可根据上下文提示用was designed.
3. **考查关系副词**。句意：“每个部分可以代表一个收集信息的地点……”此处关系副词“where”引导定语从句，修饰“location”，表示地点，故填where。
4. **考查名词复数**。句意：“每个部分可以代表一个收集有关动物或树木种群信息的地点。”此处用复数形式“populations”来表示“种群数量”，符合上下文，故填populations。
5. **考查副词**。句意：“第二个神经网络特别擅长分析这些系统如何随时间变化。”此处副词“how”修饰动词短语“change over time”，表示方式，故填how。
6. **考查过去分词**。句意：“它接收由第一个网络处理的信息以发现重复的模式……”此处“processed”作定语，修饰前面的“information”，表示“被处理的”信息，故填processed。
7. **考查形容词比较级**。句意：“Yan解释说，虽然早期的研究主要关注当系统接近临界点时某些数据趋势……”此处需要用“earlier”表示“更早期的”，符合句意，故填earlier。
8. **考查动词不定式**。句意：“我们的AI通过确定导致系统失败的确切条件，进一步发展。”固定搭配“cause something to do something”表示“导致某事发生”，故填to fail。
9. **考查时态**。句意：“如果系统达到这种特定状态，它将立即崩溃。”表示未来将要发生的事情，用一般将来时，故填will collapse。
10. **考查冠词**。句意：“……包括关于一个突然变成草地的中非森林的20年真实数据。” 此处“grassland”是可数名词单数形式，前面需用不定冠词，故填a。

**【原创·课标高频词训练】**

1. The scientists \_\_\_\_\_\_\_\_ (identify) the key factors contributing to climate change.
2. Without proper maintenance, the old bridge \_\_\_\_\_\_\_\_ (collapse) under the weight of heavy traffic.
3. The new curriculum \_\_\_\_\_\_\_\_ (structure) to develop critical thinking and creativity among students.
4. The instructions were \_\_\_\_\_\_\_\_ (specific) designed to be easy for beginners to follow.
5. The company’s \_\_\_\_\_\_\_\_ (represent) will be attending the conference to discuss potential collaborations.
6. The store offers a wide variety of products, \_\_\_\_\_\_\_\_ (range) from electronics to home appliances.
7. The food \_\_\_\_\_\_\_\_ (process) to retain its nutritional value carefully.
8. The event \_\_\_\_\_\_\_\_ (occur) unexpectedly, causing a major disruption in the schedule.
9. The new software \_\_\_\_\_\_\_\_ (function) efficiently even under heavy loads.
10. The exhibition, \_\_\_\_\_\_\_\_ (feature) works by local artists, attracted a large crowd.
11. The population of the city \_\_\_\_\_\_\_\_ (decrease) steadily over the past decade.
12. The successful launch was the result of a \_\_\_\_\_\_\_\_ (combine) of talent, hard work, and timing.
13. The deadline for the project \_\_\_\_\_\_\_\_ (approach) faster than expected, so the team is working overtime.
14. The new policy \_\_\_\_\_\_\_\_ (aim) at improving customer satisfaction and reducing response times.
15. The conference is held \_\_\_\_\_\_\_\_ (annual), attracting participants from around the world to discuss the latest developments in technology.

【答案】

| 1. identified | 2. will collapse | 3. is structured | 4. specifically | 5. representative |
| --- | --- | --- | --- | --- |
| 6. ranging | 7. was processed | 8. occurred | 9. functions | 10. featuring |
| 11. has decreased | 12. combination | 13. is approaching | 14. is aimed | 15. annually |

**【梳理·外刊中的课标词】**

|  |  |  |  |
| --- | --- | --- | --- |
| **词汇** | **中文注释** | **词汇** | **中文注释** |
| tipping point |  | system |  |
| power |  | network |  |
| predict |  | identify |  |
| collapse |  | type |  |
| structure |  | specific |  |
| represent |  | region |  |
| range |  | process |  |
| prevent |  | per |  |
| pattern |  | particular |  |
| occur |  | location |  |
| interaction |  | improve |  |
| immediately |  | harvest |  |
| further |  | function |  |
| focus |  | feature |  |
| disease |  | detect |  |
| design |  | decrease |  |
| crop |  | complex |  |
| combine |  | biology |  |
| behave |  | available |  |
| artificial |  | approach |  |
| annual |  | analyse |  |
| aim |  | actually |  |
| ecosystem |  | suddenly |  |
| rainfall |  | precise |  |
| colleague |  | transition |  |
| scarce |  | intelligence |  |
| connection |  | data |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **词汇** | **中文注释** | **词汇** | **中文注释** |
| tipping point | n. 临界点 | system | n. 系统 |
| power | n. 电力系统 | network | n. 网络，系统 |
| predict | v. 预测 | identify | v. 确定，识别 |
| collapse | n./v. 崩溃，倒塌 | type | n. 类型 |
| structure | n. 结构 | specific | adj. 特定的，具体的 |
| represent | v. 表示，代表 | region | n. 地区 |
| range | n. 范围 | process | v. 处理 |
| prevent | v. 防止 | per | prep. 每 |
| pattern | n. 模式 | particular | adj. 特定的 |
| occur | v. 发生 | location | n. 位置 |
| interaction | n. 互动，交互 | improve | v. 改善 |
| immediately | adv. 立即 | harvest | n./v. 收成，收获 |
| further | adv. 进一步 | function | n. 功能 |
| focus | v./n. 集中，关注 | feature | n. 特征 |
| disease | n. 疾病 | detect | v. 检测，发现 |
| design | v./n. 设计 | decrease | v. 减少 |
| crop | n. 庄稼，作物 | complex | adj. 复杂的 |
| combine | v. 结合 | biology | n. 生物学 |
| behave | v. 表现，运作 | available | adj. 可用的 |
| artificial | adj. 人工的，非自然的 | approach | n./v. 方法，接近 |
| annual | adj. 每年的 | analyse | v. 分析 |
| aim | n./v. 目标，旨在 | actually | adv. 实际上 |
| ecosystem | n. 生态系统 | suddenly | adv. 突然地 |
| rainfall | n. 降水量 | precise | adj. 精确的 |
| colleague | n. 同事 | transition | n. 转变，过渡 |
| scarce | adj. 稀缺的 | intelligence | n. 智能 |
| connection | n. 连接，联系 | data | n. 数据 |