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## Using Tourist Photos to Track Antarctica's Penguins with AI

### Description

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Adélie penguins in Antarctica

Prof. Heather Lynch

Artificial intelligence (AI) is revolutionizing the way researchers observe and map penguin colonies in Antarctica, leveraging the vast number of photographs taken by tourists. "With everyone carrying a camera, the volume of data being collected is staggering," remarks [Heather Lynch](#) from Stony Brook University in New York.

In a collaborative effort, [Haoyu Wu](#) and his team, including Lynch, utilized a sophisticated [AI tool](#) developed by Meta. This technology, under the guidance of an expert, swiftly identifies and delineates entire penguin colonies in photographs, completing tasks in just 5 to 10 seconds compared to the manual process, which takes considerably longer.

The team also constructed a detailed 3D model of the Antarctic landscape using satellite images and elevation data, enabling them to accurately position the penguin colonies within this model. This innovative approach transforms standard ground photos into a comprehensive bird's-eye view, allowing scientists to track changes in penguin populations and locations over time—a critical endeavor given the species' role as indicators of climate change.

However, the implications of Antarctic tourism remain contentious. As pointed out by [Annie Schmidt](#), understanding the factors driving population changes is vital. Some scientists worry that promoting citizen science among tourists could unintentionally boost tourism, while others believe the impact is minimal due to strict regulations.

Topics:

- artificial intelligence/
- Antarctica

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## Vocabulary List:

1. **Artificial** /ɑ:tɪfɪʃ.əl/ (adjective): Made or produced by human beings rather than occurring naturally.
2. **Revolutionizing** /,rɛvə'lju:ʃənʌɪzɪŋ/ (verb): Causing a complete or dramatic change in something.
3. **Delineates** /dɪ'lɪnɪ,eɪts/ (verb): Describes or portrays something precisely.
4. **Innovative** /'ɪn.ə.veɪ.tɪv/ (adjective): Introducing or using new ideas or methods.
5. **Indicators** /'ɪndɪ,keɪtərz/ (noun): Things that point out or show a condition or trend.
6. **Contentious** /kən'tenʃəs/ (adjective): Causing or likely to cause an argument; controversial.

## Comprehension Questions

### Multiple Choice

1. Who remarked about the staggering amount of data being collected through photographs of penguin colonies in Antarctica?

- Option: Heather Lynch
- Option: Haoyu Wu
- Option: Annie Schmidt
- Option: Meta

2. Which university is Heather Lynch affiliated with?

- Option: Stony Brook University
- Option: Harvard University
- Option: Yale University
- Option: Oxford University

3. What innovative technology was developed by Meta and used to identify penguin colonies in photographs?

- Option: AI tool
- Option: Satellite imagery
- Option: Robotics
- Option: Drones

4. How long does it take the AI tool to complete the task of identifying and delineating entire penguin colonies in photographs?

- Option: 5 to 10 seconds
- Option: 1 hour
- Option: 1 day
- Option: 1 week

5. What was used to construct a detailed 3D model of the Antarctic landscape enabling accurate positioning of penguin colonies?

- Option: Satellite images and elevation data
- Option: Ground-based cameras
- Option: Underwater drones
- Option: LiDAR technology

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6. Why is tracking changes in penguin populations and locations over time considered a critical endeavor?

- Option: Penguins are indicators of climate change
- Option: For entertainment purposes
- Option: To promote tourism
- Option: For historical reasons

**True-False**

7. Heather Lynch is affiliated with Harvard University.

8. The AI tool developed by Meta can complete tasks faster than the manual process.

9. The 3D model of the Antarctic landscape was constructed using only ground photos.

10. The technology used by the researchers transforms ground photos into a bird's-eye view.

11. Annie Schmidt believes that promoting citizen science among tourists could unintentionally boost tourism.

12. Penguin populations and locations do not play a role as indicators of climate change.

**Gap-Fill**

13. Heather Lynch is from \_\_\_\_\_ University in New York.

14. The AI tool developed by Meta can swiftly identify and delineate entire penguin colonies in photographs in just 5 to \_\_\_\_\_ seconds.

15. Understanding the factors driving population changes is considered vital by \_\_\_\_\_ Schmidt.

16. Some scientists worry that promoting \_\_\_\_\_ science among tourists could unintentionally boost tourism.

17. The sheer volume of data collected by tourists carrying cameras in Antarctica is \_\_\_\_\_.

18. The 3D model of the Antarctic landscape enables scientists to track changes in penguin populations and locations over \_\_\_\_\_.

## Answer

**Multiple Choice:** 1. Heather Lynch 2. Stony Brook University 3. AI tool 4. 5 to 10 seconds 5. Satellite images and elevation data 6. Penguins are indicators of climate change

**True-False:** 7. False 8. True 9. False 10. True 11. True 12. False

**Gap-Fill:** 13. Stony Brook 14. 10 15. Annie 16. citizen 17. staggering 18. time

## Vocabulary quizzes

### Multiple Choice ( Select the Correct answer for each question. )

1. Which term describes something innovative and pioneering?

- Option: Artificial
- Option: Groundbreaking
- Option: Enhancing
- Option: Artificial

2. What term describes a material that allows light to pass through but diffuses it?

- Option: Translucent
- Option: Renewable
- Option: Emissions
- Option: Infrastructure

3. Which term refers to introducing new ideas or methods?

- Option: Innovative
- Option: Mitigating
- Option: Associated
- Option: Verification

4. Which term means connected or related to something?

- Option: Phenomenal

Option: Biological  
Option: Artificial  
Option: Associated

5. What term describes an energy source that is not depleted when used?

Option: Simulate  
Option: Renewable  
Option: Genisis  
Option: Gleaned

6. Which term is related to living organisms and their functions?

Option: Biological  
Option: Detection  
Option: Confluence  
Option: Compounds

7. What term refers to substances formed from two or more elements?

Option: Transformation  
Option: Delineates  
Option: Compounds  
Option: Emissions

8. Which term describes the origin or mode of formation of something?

Option: Infrastructure  
Option: Genesis  
Option: Confluence  
Option: Ancestry

9. What term refers to the basic physical and organizational structures needed for a society or enterprise to function?

Option: Chronicles  
Option: Mitigating  
Option: Translucent  
Option: Infrastructure

10. What term is used to describe substances released into the air especially by cars and factories?

Option: Associated  
Option: Groundbreaking  
Option: Emissions  
Option: Artificial

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. The invention of the smartphone truly \_\_\_\_\_ the way we communicate.
12. Regular exercise plays a key role in \_\_\_\_\_ your overall health.
13. The intelligence displayed by the chess-playing computer was completely \_\_\_\_\_.
14. Planting trees is one way of \_\_\_\_\_ the effects of climate change.
15. The team's performance in the championship was truly \_\_\_\_\_.
16. The book \_\_\_\_\_ the life of a young girl growing up in wartime.
17. The security system \_\_\_\_\_ unauthorized access to the building.
18. The report clearly \_\_\_\_\_ the key findings of the research.
19. From the data collected the researchers \_\_\_\_\_ valuable insights into consumer behavior.
20. The city is located at the \_\_\_\_\_ of two major rivers.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. The new technology is the way we approach healthcare.
22. The sudden increase in sales was a that surprised everyone.
23. Economic growth and employment rates are important of a country's development.
24. The issue of climate change is highly with strong arguments on both sides.
25. Solar and wind energy are examples of energy sources.
26. Graduating from college was a significant in her life.
27. Planting trees is one way of the effects of climate change.

28. The symptoms are often with the onset of the disease.

29. The authenticity of the document requires careful .

30. Learning about her family's helped her understand her cultural background.

## Answer

**Multiple Choice:** 1. Groundbreaking 2. Translucent 3. Innovative 4. Associated 5. Renewable 6. Biological 7. Compounds 8. Genesis 9. Infrastructure 10. Emissions

**Gap-Fill:** 11. revolutionized 12. enhancing 13. artificial 14. mitigating 15. phenomenal 16. chronicles 17. detected 18. delineates 19. gleaned 20. confluence

**Matching sentence:** 1. revolutionizing 2. phenomenon 3. indicators 4. contentious 5. renewable 6. milestone 7. mitigating 8. associated 9. verification 10. ancestry

## CATEGORY

1. Sci/Tech - LEVEL4

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