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# X1: First Multi-Robot Team Deployed in Rescue Missions

## Description

Late last year, in Pasadena, California, a robot named X1 walked across the California Institute of Technology (Caltech) campus. This robot carried a second robot on its back. The X1 system was designed for tasks that are too dangerous for humans.

Engineers from Caltech and Abu Dhabi's Technology Innovation Institute (TII) developed this robot duo as part of a three-year project. Each robot has a specific role, working together as a team.

The project is led by Aaron Ames, who focuses on robots that operate without direct human commands. The primary robot in the X1 system is a modified humanoid robot that can walk and carry heavy equipment. The second robot, called M4, can change shape to fit different tasks.

During a demonstration, the X1 system moved from a lab through a library and outside. The humanoid robot lifted M4 into the air as a drone. After completing its mission over a pond, M4 landed and returned to its carrying position.

Researchers highlight that X1 can adapt its movements to different challenges, like stairs or rough terrain. They aim to ensure that when robots like X1 are used in emergencies, they can make safe decisions on their own. The team hopes to show that these robots can be trusted in disaster situations, providing help without risking human lives.

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## Vocabulary List:

1. **humanoid** //ˈhju:mə,nɔɪd// (adjective): having a human shape or appearance
2. **demonstration** //,dɛmən'streɪʃən// (noun): a public showing of how something works
3. **adapt** //ə'dæpt// (verb): to change behavior to fit new conditions
4. **terrain** //tə'reɪn// (noun): the shape and type of land
5. **emergencies** //ɪ'mɜːdʒənsɪz// (noun): dangerous or sudden situations needing quick help
6. **duo** //ˈdu:ə// (noun): a pair of two people or things

## Comprehension Questions

### Multiple Choice



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1. What is the name of the robot that walked across the Caltech campus?

- Option: M4
- Option: X1
- Option: TII
- Option: Aaron

2. Who is leading the project for the X1 robot?

- Option: Aaron Ames
- Option: Researchers
- Option: Engineers
- Option: Caltech

3. What is the secondary robot in the X1 system called?

- Option: X1
- Option: M4
- Option: Caltech
- Option: TII

4. What type of robot is the primary robot in the X1 system?

- Option: Drone
- Option: Humanoid
- Option: Quadruped
- Option: Biped

5. Which institution collaborated with Caltech to develop the X1 robot?

- Option: MIT
- Option: Stanford
- Option: Technology Innovation Institute
- Option: Harvard

6. What was one of the challenges that X1 can adapt its movements to?

- Option: Water
- Option: Low Visibility
- Option: Stairs
- Option: Snow

**True-False**



7. The X1 robot is capable of making decisions without any human commands.
8. M4 is equipped to carry heavy equipment.
9. The project for the X1 system is a one-year initiative.
10. Researchers believe that robots like X1 can be trusted in disaster situations.
11. The X1 robot demonstrated its capabilities indoors only.
12. Engineers developed the X1 robot alone without any collaboration.

### Gap-Fill

13. The X1 robot was designed for tasks that are too dangerous for \_\_\_\_\_ humans.
14. The secondary robot, M4, can change \_\_\_\_\_ to fit different tasks.
15. Researchers aim to ensure robots like X1 can make safe \_\_\_\_\_ on their own.
16. The project involving the X1 system is a three-year \_\_\_\_\_ project.
17. During the demonstration, X1 moved from a lab through a \_\_\_\_\_ and outside.
18. The humanoid robot lifted M4 into the air as a \_\_\_\_\_ during its demonstration.

### Answer

**Multiple Choice:** 1. X1 2. Aaron Ames 3. M4 4. Humanoid 5. Technology Innovation Institute 6. Stairs

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

**Gap-Fill:** 13. humans 14. shape 15. decisions 16. research 17. library 18. drone

### Vocabulary quizzes

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

1. What property describes how easily a substance can catch fire?



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- Option: Ignition point  
Option: Flammability  
Option: Combustibility  
Option: Extinction point
2. What term refers to anything related to the moon?  
Option: Solar  
Option: Celestial  
Option: Lunar  
Option: Stellar
3. Which force keeps the planets in orbit around the sun?  
Option: Electromagnetic force  
Option: Gravity  
Option: Friction  
Option: Inertia
4. What do we call the natural home or environment of an organism?  
Option: Biome  
Option: Ecosystem  
Option: Habitat  
Option: Community
5. What is the process of starting a fire called?  
Option: Quenching  
Option: Extinguishing  
Option: Igniting  
Option: Combusting
6. What term is used to describe robots or beings that resemble humans?  
Option: Cyborg  
Option: Humanoid  
Option: Artificial intelligence  
Option: Automaton
7. What is a presentation used to explain a concept or show how something works called?  
Option: Exhibition  
Option: Demonstration  
Option: Lecture  
Option: Workshop
8. What term describes the process of changing to fit new conditions?  
Option: Adhere



- Option: Adapt
- Option: Adopt
- Option: Adjust

9. What term refers to the physical features of a landscape?

- Option: Topography
- Option: Landscape
- Option: Terrain
- Option: Geography

10. What do we call urgent situations that require immediate action?

- Option: Calamities
- Option: Incidents
- Option: Disasters
- Option: Emergencies

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

11. A famous magician and his assistant formed a remarkable \_\_\_\_\_ in the show.
12. The upcoming movie was promoted with an exciting \_\_\_\_\_ that highlighted key scenes.
13. A rocket acts as a \_\_\_\_\_, traveling through the air at high speed.
14. The \_\_\_\_\_ was called to fix the broken engine in the car.
15. The store had a checkout \_\_\_\_\_ where customers paid for their items.
16. In science fiction, characters can \_\_\_\_\_ instantly from one location to another.
17. The company plans to \_\_\_\_\_ its new product next month.
18. The software includes \_\_\_\_\_ of retro gaming systems for improved user experience.
19. The computer's \_\_\_\_\_ must be updated to run the latest software efficiently.
20. The engineers used an \_\_\_\_\_ for rapid prototyping of digital circuits.



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

21. The retro style of the clothing brought back memories of the 1980s.
22. The advertisement was deemed misleading due to exaggerated claims.
23. Accurate measurement is crucial in scientific experiments to yield reliable results.
24. There was a discrepancy between the reported and actual figures in the report.
25. An isotope is a variant of a chemical element that has the same number of protons but a different number of neutrons.
26. A muon is a subatomic particle similar to an electron but with a much greater mass.
27. A vacuum refers to a space devoid of matter, including air.
28. Research scientists frequently use advanced techniques to analyze data efficiently.
29. The rugged terrain made it challenging for the hikers to reach the summit.
30. Emulation technology allows newer systems to run software designed for older platforms.

**Answer**

**Multiple Choice:** 1. Flammability 2. Lunar 3. Gravity 4. Habitat 5. Igniting 6. Humanoid 7. Demonstration 8. Adapt 9. Terrain 10. Emergencies

**Gap-Fill:** 11. duo 12. trailer 13. projectile 14. mechanic 15. counter 16. teleport 17. launch 18. emulation 19. hardware 20. FPGA

**Matching sentence:** 1. retro 2. misleading 3. measurement 4. discrepancy 5. isotope 6. muon 7. vacuum 8. techniques 9. terrain 10. emulation

**CATEGORY**

- 1. Sci/Tech - LEVEL3

**POST TAG**

- 1. ESL learning
- 2. esl news
- 3. Level 3
- 4. meet x1
- 5. multi-robot team



6. rescue missions

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**Date Created**

2026/04/25

**Author**

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ESL-NEWS.COM