Robots May Rescue You from Future Disasters

In 2011, an earthquake and its accompanying tsunami destroyed Japan's Fukushima nuclear power plant.

1) 그 결과로서 핵 재난은 방대한 양의 방사능 물질을 주변 지역으로 방출했다

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2) 사람이 이 환경에서 일하는 것은 불가능했기 때문에, 일본 정부는 사태를 처리하기 위해 로봇을 보내는 것을 고려했다.

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The robots the Japanese were using, however, were not up to the task. Eventually, humans had to do most of the extremely dangerous work.

3) 그 때부터, 위험한 상황에 도움을 줄 수 있는 로봇을 개발하는 것이 재차 강조되어 왔다.

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4) 일본의 핵 재난에 대응하여, 재난이 닥친 지역에서 일할 수 있는 로봇 개발을 가속하기 위해 2015년 DARPA 로봇 챌린지가 만들어졌다.

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The competition attracted 25 teams from around the world. The winner was a Korean team from KAIST who developed a robot called HUBO.

5) 대회에서, 로봇은 그들이 재난 상황에서 맞닥뜨릴 수 있는 일련의 문제를 해결해야 했다.

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The tasks were: driving a vehicle, getting out of the vehicle, opening a door, locating and closing a leaking valve, using a drill to cut through a wall, pulling a plug out of a wall socket and then plugging it in, navigating rough terrain, and climbing stairs.

HUBO completed all eight tasks in the shortest time of all the competitors – 44 minutes and 28 seconds.

6) HUBO의 성공의 열쇠는 선 자세에서 무릎을 꿇은 자세로 움직이는 능력이었다.

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HUBO had wheels attached to its knees and feet. When kneeling, HUBO was able to use these wheels to move around quickly and decisively.

From the beginning, HUBO was better than the other robots at performing the tasks.

7) 그것은 운송 수단을 빠르게 운전할 수 있었고, 장애물을 만났을 때 그것은 운송 수단을 부드럽게 돌려 피할 수 있었다.

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Next, it was able to get out of the car in less than four minutes and, once out of the vehicle, got on its knees and sped away.

8) 8개의 일련의 일이 점점 어려워짐에 따라, HUBO의 일 수행도 증가하는 난이도를 반영했다.

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On the fifth task, for which it had to use a drill to cut through a wall, HUBO failed on its first attempt.

9) 일반적으로 말해, 로봇이 드릴을 올바른 자세로 잡고 동시에 전원 버튼을 누르는 것은 어려운 일이다,

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On the second trial, however, HUBO successfully completed the task.

10) HUBO가 가장 오래 걸렸던 일은 여섯 번째 것인데, 벽의 소켓에서 플러그를 뽑고 다른 곳에 다시 꽂는 것이다.

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It takes a human less than 10 seconds to perform the task, but it took HUBO 13 minutes and 30 seconds.

For the final task, climbing stairs, it was important that the robot be able to see its feet.

11) 다른 로봇들은 이것을 어려워했는데, 그들이 무릎 너머로 계단을 보아 스캔하기 위해서는 자신의 몸을 앞으로 굽혀야 했기 때문이다.

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This awkward move caused them to lose their balance.

12) HUBO는 이 문제를 똑똑하게 해결했다. 그것은 계단을 뒤로 올라갔다.

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But how did it see the steps if it was moving backwards? By rotating its upper body 180 degrees.

13) 그 방법으로, 로봇의 무릎은 발이나 바닥의 카메라 시야를 가리지 않았다.

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14) 계단을 스캔한 후, 로봇은 위로 오르기 위해 출발했고, 그 일을 손쉽게 완수했다.

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This amazing robot was not made in a day. The KAIST team had already built four HUBOs and had been improving them for years.

15) 그들은 야외에서, 날씨가 좋을 때나 나쁠 때, 그리고 나쁜 지형에서도 연습했다. 그들은 모터를 계속해서 소진했지만, 절대로 포기하지 않았다.

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16) 그들은 각각의 실패를 더 빠르고, 강하고, 더 나은 로봇을 만들기 위한 도전으로 접근했다.

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The DARPA Robotics Challenge eventually ended, but it is only the beginning. In the future, there will be other robots like HUBO.

17) 그것들은 인간에게는 너무 위험한, 복잡한 일을 수행하기 위해 요청될 것이다.

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Scientists expect that these robots will save lives and reduce the damage caused by future disasters.

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정답

1) [정답] The resulting nuclear disaster released large amounts of radioactive material into the surrounding area.

2) [정답] Since it was impossible for humans to work in this environment, the Japanese government considered sending in robots to handle the situation.

3) [정답] Since then, there has been renewed emphasis on developing robots that can serve in dangerous situations.

4) [정답] In response to Japan's nuclear disaster, the 2015 DARPA Robotics Challenge was created to speed up the development of robots that could work in disaster-stricken areas.

5) [정답] During the competition, the robots had to solve a series of problems they might come upon in a disaster situation.

6) [정답] The key to HUBO's success was its ability to move from a standing position to a kneeling position.

7) [정답] It was able to drive a vehicle fast and when it encountered a barrier, it was able to turn the vehicle smoothly to avoid it.

8) [정답] As the series of eight tasks became progressively more difficult, HUBO's performance on the tasks reflected the growing difficulty.

9) [정답] Generally speaking, it was difficult for a robot to hold a drill in the right position and simultaneously press an on/off button.

10) [정답] The task that took the longest time for HUBO was the sixth one, pulling a plug out of a wall socket and putting it back into another.

11) [정답] Other robots had difficulty doing this because they had to bend their bodies forward to see over their knees to scan the stairs.

12) [정답] HUBO solved this problem in a clever way. It climbed the stairs backward.

13) [정답] That way, the robot's knees did not block the camera's view of either the feet or the floor.

14) [정답] After scanning the stairs, the robot set off to climb to the top, completing the task effortlessly.

15) [정답] They practiced outdoors, in good weather and bad, and on rough terrain. They burned up motor after motor, but never gave up.

16) [정답] They approached each failure as a challenge to make a faster, stronger, and better robot.

17) [정답] They will be called upon to perform complicated tasks that will be too dangerous for humans.