Lesson 1330

Japanese Scientists Make Robot Face ‘Smile’ with Lab-Grown Skin

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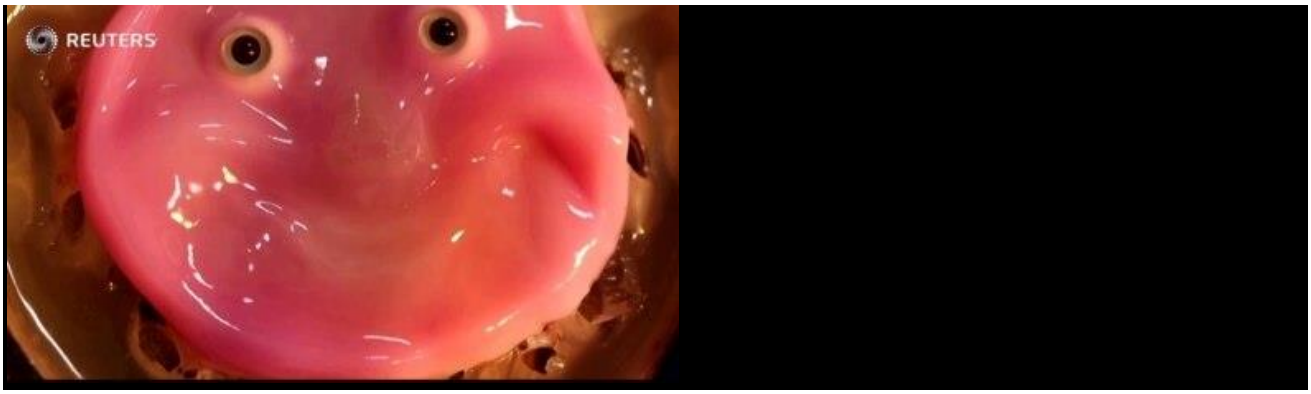


Japanese scientists have found a way to attach living skin tissue to robotic faces and make them "smile." This breakthrough could be helpful not only in robotics, but also in **cosmetics** and medicine.

Researchers at the University of Tokyo started the process by growing human skin cells in the shape of a face. Then, they used attachments that are similar to the **ligaments** in a human to pull the tissue into a wide smile.

First step to other breakthroughs

Lead researcher Shoji Takeuchi is a professor at the University of Tokyo. He said the result is an important step towards building more life-like robots. Using the attachments, he said, “it became possible to **manipulate** living skin for the first time.”

The study about the smiling robot appeared last month in *Cell Reports Physical Science*. It represents 10 years of research by Takeuchi and his lab on how to best combine biological and artificial machines.

Living tissue is better for this application than metals and plastics, Takeuchi said. He noted that brains and muscles are more **efficient** in use of energy and the skin can repair itself.

In the future, the researchers aim to add more elements to the lab-grown skin, including a **circulatory** system and nerves. That could lead to safer testing methods for cosmetics and drugs **absorbed**, or taken in, through the skin.

It could also produce more realistic and functional coverings for robots. The remaining issue is how people react to machines that appear almost lifelike, but do not look exactly like humans.

"There's still a bit of that **creepiness** to it," Takeuchi said about the robot.

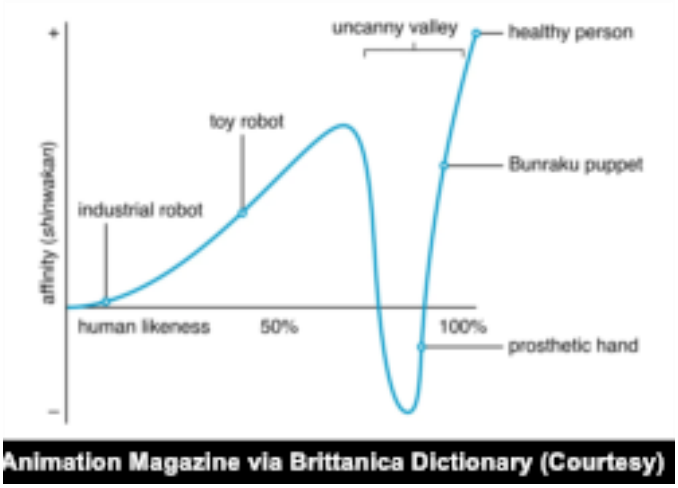
The uncanny valley

He added, "I think that making robots out of the same materials as humans and having them show the same expressions might be one key to overcoming the **uncanny** valley."

The “uncanny valley” is an idea that relates to how humans react to robots or other machines that act like humans. “Uncanny” is an adjective that means “being beyond what is normal or expected.”

Japanese robotics scientist Masahiro Mori published a work, *Bukimi No Tani*, or “Uncanny Valley” in 1970. It proposed how people would react to lifelike robots, or androids.

Mori thought that at first, people would have **positive** feelings about robots that look a little bit like humans. But as robots got closer to being realistic human models, he believed those feelings would become more **negative**.



Graph illustrating the "uncanny valley" by Masahiro Mori

Those negative feelings are the so-called low point, or “valley,” in a chart that represents the relationship between the human-like appearance of robots and humans’ feelings toward and acceptance of such robots.

I’m Jill Robbins.

Rocky Swift reported this story for Reuters. Jill Robbins adapted it for Learning English with additional information from the Brittancia Dictionary.

Words in This Story

cosmetic – *n.* a substance (such as a cream, lotion, or powder) that you put on your face or body to improve your appearance

ligament – *n.* a tough piece of tissue in your body that holds bones together or keeps an organ in place

eerie – adj. strange and mysterious

manipulate – *v.* to move or control (something) with your hands or by using a machine

circulatory – *adj*. of or relating to the circulation of blood through the body

creepy – *adj*. producing a nervous shivery apprehension; annoyingly unpleasant

affinity – n. an attraction to or liking for something

uncanny valley – *n*. the unsettling feeling that comes when robots start to resemble humans a little too closely.

positive – *adj*. thinking about the good qualities of someone or something

negative– *adj*. thinking about the bad qualities of someone or something