Robot Dogs

Fiona Chen

Figure 1: Image by Rebecca Bao

A dog is a man's best friend; these furry creatures are loved by millions. Multiple companies are in the race to develop the next piece of breaking technology: a robot dog. However, dogs—being complex, living organisms that create sound, move, and possess individual thought—are intensely difficult to recreate.

Diverse Functions

Many different companies such as Sony and Boston Dynamics have created robot dogs. However, the various models are specialized in different ways. For example, the Sony robot Aibo is built to simulate a household dog and act as a life-long companion. The Boston Dynamics dog Spot, on the other hand, is built to execute dangerous tasks, such as looking for gas leaks and inspecting dangerous areas.

Sony's Aibo is a stainless steel dog which features four legs, a head, ears, and a tail, resembling a real dog. It moves and sounds like its carbon-based counterparts. Aibo is able to express emotions and grow close with its owner. Every Aibo carries a different personality and grows differently depending on its interactions. The purpose of this robot is to act as a pet.

The Boston Dynamics robot dog is named Spot. Although its appearance may not be as cute and friendly as Aibo's, it is more durable. The Boston Dynamics dog is known for its mobility; it can roll on its back and get back up on its legs, get up after being knocked down, and even walk up stairs. In addition to being dust and waterproof, Spot has a full range of vision and can also run at 1.6 meters per second. It is able to operate in temperatures ranging from -20 degrees to 45 degrees Celsius (-4 to 113 degrees Fahrenheit).

Technology in a Robot Dog

To make a robot truly function like a dog, it needs to be able to move on four legs and act accordingly. Due to advancements in technology, engineers can allow robots to move through sensors, actuators, and artificial intelligence (AI). Sensors are one of the fundamental blocks of modern data acquisition systems. This allows them to gather data around them to process later

on. Actuators allow movement to occur in robots by converting energy into mechanical force, much like a muscle in the human body. Actuators help the robot move around. Artificial intelligence refers to machines that are capable of performing tasks by mimicking human intelligence. Artificial intelligence allows robots to learn from their surroundings and process it to help them complete their tasks.

The Future of Robot Dogs

It's very likely we will see more Spots, Aibos, or maybe other emerging metal breeds. The Boston Dynamic Dog will presumably be seen in more unstable environments while the Sony Aibo will be seen in nursing homes and care facilities.

Spot is gaining new functions through the implementation of sensors. With the right sensors, Spot is able to conduct inspections of nuclear waste. This increases proficiency in nuclear power plants by shortening the maintenance time. Spot is also able to collect extensive data faster than a person. Therefore, it is likely that Spot will be often utilized at dangerous sites and in companies.

Aibo is built to resemble a real dog and be a companion. According to research conducted on the relationships between Aibo and humans, people tend to grow attached to Aibo and treat it like an animal rather than a robot. Over time, questions asked about Aibo became more nurturing. Thus, the Sony robot dog will most likely be seen in care facilities to accompany patients.

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