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ARTIFICIAL INTELLIGENCE FOR ANIMAL LOVERS

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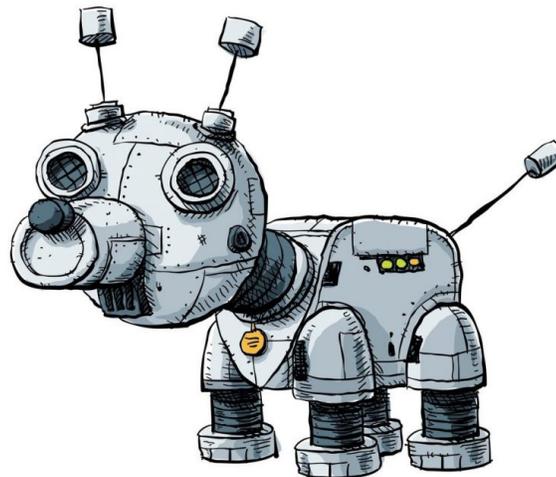
From replacement lab rats to a lovable watch dog, Artificial Intelligence is helping to protect the animal kingdom.

Artificial Intelligence (AI) is much more than the thinking, feeling robots often portrayed in pop culture.

"Artificial intelligence is basically trying to have machines make sense, learn, and interface with the external world, without requiring programming by human beings," said Nidhi Chappell, Director of Machine Learning at Intel, and the applications for the tech are seemingly endless.

From autonomous cars (https://iq.intel.com/autonomous-cars-road-ahead/) taking over our commutes to artificially intelligent robots teaching in our classrooms (https://iq.intel.com/robot-teachers-in-the-classroom/), AI technology is a major talking point right now in terms of how it is impacting the world of people (https://www.youtube.com/watch?v=ss5Ft9BcJvo&index=48&list=PLKfWL8IXgKBte4TfD53pLaHONfSYCX0RH). Less discussed are the ways in which AI is being used in relation to animals, but several companies and creators are merging artificial intelligence with the animal kingdom in unique ways.

Outsmarting Poachers with AI

Every day, an estimated 96 African elephants (http://news.nationalgeographic.com/2016/06/paws-artificial-intelligence-fights-poaching-ranger-patrols-wildlife-conservation/) are killed by poachers eager to strip the animals of their valuable ivory tusks. Now, halfway across the world from the areas where those elephants live, a computer scientist has found a way to help protect them.

Milind Tambe and his team at the University of Southern California have developed AI-powered software to predict the hunting patterns of elephant poachers. Protection Assistant for Wildlife Security (http://teamcore.usc.edu/people/feifang/crime/) (PAWS) analyzes data on previous poaching activity and suggests patrol routes where future activity is likely to occur.

Thus far, the software has proven to be very effective for dealing with poachers, and while Tambe is clear that more testing is needed, he is proud of the results.

"Compared to historical observation rates of illegal activity, rangers that used our model to guide their patrols observed 10 times the number of findings than the average," he said.

Those findings include signs of trespassing, unactivated elephant and antelope snares, and, unfortunately, even a poached elephant. Tambe hasn't let that discovery dampen his spirits, though.

"While the rangers' finding of a poached elephant carcass is a grim reminder that poachers are active, snare confiscations show the power of AI research is having an impact in the field," he said.

Save the Wildlife, Save the Planet: Protection Assistant for Wildlife Security (PAWS)

Man's Best Friend 2.0

While PAWS is doing its part to save the lives of threatened animals, one Beijing start-up is taking a more light-hearted approach by creating an artificially intelligent "pet" dog.

This summer, China's ROOBO shared its latest creation with the world: Domgy (http://www.roobo.com/en/). The pup bot can roll around a house, navigating obstacles, and it even knows to return to its charging station when battery power is low.

Domgy can be controlled via smartphone and is equipped with facial recognition software that allows it to identify and greet individual family members, learn how they like to be entertained, and follow that owner's specific rules and preferences.

Aside from offering companionship and a laugh, Domgy can serve as a smart controller for all of its owner's IoT (https://iq.intel.com/?s=%22internet+of+things%22) devices, turning on electronics, adjusting the thermostat and acting as an alternative to the standard alarm clock.

It is also a security system thanks to a 5M camera in the device's head. Owners can check in on what their "guard dog" is seeing as it patrols an empty house, and Domgy will even alert family members when it discovers a stranger in the home, according to ROOBO's Marketing Director Anthony Chen (https://techcrunch.com/2016/06/16/meet-domgy-an-ai-pet-robot-from-beijing-startup-roobo/).

While Domgy isn't directly impacting the lives of animals, it could serve as a stepping stone of sorts to pet adoption, building an affinity for all creatures great and small in the children who grow up around the device. It also enables parents to assess how their kids may react to the introduction of a live pet.

DOMGY Intelligent Pet Robot

AI Advances Could Minimize Drug Testing on Animals

A hard truth about medical innovation has long been the necessity for animal testing (http://www.fda.gov/AboutFDA/Transparency/Basics/ucm194932.htm) before a drug could be approved for human use. One big data analytics company is finding a way to

replace live animal subjects with artificially intelligent substitutes.

From its headquarters at John Hopkins University in Baltimore, Insilico Medicine (http://insilicomedicine.com/) develops new drugs and researches techniques to combat aging and disease. Instead of using live animals or humans, they use computers to test clinical trials through analysis and deep learning methods.

"At Insilico, we have not sacrificed a single mouse yet," said the company's CEO Alex Zhavoronkov. "All of our predictions were made on human data and on data obtained from human cells, tissues and organoids."

Given enough data, the systems are able to make accurate predictions without the need for animal testing, though Zhavoronkov acknowledges that traditional testing methods are still needed in some cases. He also believes, however, these methods are overused and often not particularly accurate.

"Clinical trials in humans fail over 90 percent of the time after therapies have been tested in mice," he said. "And the animals are often sacrificed in vain without all possible and relevant data collected."

Ultimately, Insilico's goal is to create intelligent algorithms capable of developing drugs for humans. If they're able to reach that goal, animal experimentation in healthcare could become a thing of the past.

Insilico Medicine Overview

These three companies have found unique ways to merge AI technology with the animal world, and the tech is still only in its formative stages.

"There's a lot of good things that artificial intelligence can help us with, in the terms of moving society forward," said Chappell, adding that as the technology continues to improve, the lives of both the people and animals within that society will continue to improve along with it.

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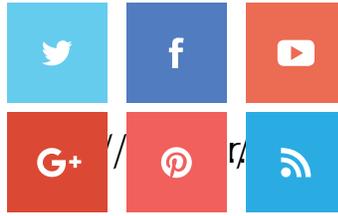# GET THE BEST OF IQ DELIVERED TO YOUR INBOX

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