When AI is more than just business - adding value in the wild

By Jessie Rudd

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Despite what Hollywood and science fiction will tell you, Artificial Intelligence (AI) solutions are designed to enhance human efforts - not replace them. Given enough data, and with the right algorithms and sound deep learning applications, any computer can be trained to perform human-like tasks. Everything from the innocuous to the complex.

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Welcome to the world of AI in service of conservation. In no way designed to replace humans or human ingenuity – teams of scientists are incorporating tireless computers into their arsenal of weapons in the fight to save our wildlife, oceans and planet. If you think about it, if AI can power Amazon's Alexa, Gmail's spam filter, or Facebook's new friends' suggestions - then surely it can be used to help the animal world.

In our fast paced, always on, busy world - deep learning and AI is not something we typically associate with conservation. Yet, AI is being successfully deployed in a variety of spheres – from learning the rapidly vanishing art of identifying footprint images and recognising patterns in a similar way to indigenous trackers, to being deployed and used to automatically identify individual giraffes from their distinct coat patterns or being utilised in the form of an 'intelligent agent' or bot which combs through YouTube every night to extract new whale shark videos.

Understanding the Giraffe

Usually done manually by researchers, AI is well positioned to identify individual animals from photos for population studies or categorising the many millions of camera trap photos gathered by field scientists. Thanks to advances in computing power and machine learning, computers can now learn on their own using banks of data.

In the last thirty years, reticulated giraffes across the regions in northern Kenya have declined up to 70%. Understanding the why of such a massive decline in a migratory animal that covers huge swathes of land daily is paramount. Biologists found themselves fighting a losing battle and rushing to assess the numbers, movements and habitats in order to start protecting a rapidly dwindling population. There simply isn't enough time or money to do the job effectively.

Enter AI and a software programme called Wildbook. Developed by a Portland-based conservation technology non-profit called Wild Me, the programme automatically identifies individual animals by their unique coat patterns, ear outlines or the like.

In a collaboration between Wildbook and the nonprofit Giraffe Conservation Foundation, researchers at the zoo's Institute for Conservation Research can take hundreds of photographs from the air over a few days and, after uploading them and the location data to their Giraffe Spotter database – a robust population assessment emerges. Deployed across Kenya – this method of collecting and collating wildlife information is the way of the future.

Why don't some whale sharks migrate?

In today's world, tourists generally upload a huge number of photos. Being able to analyse all those photos would be impossible by a human. It would take hours upon hours. Wildbook deployed something called an intelligent agent which locates and extracts still images of the whale shark from video clips. The bot is then able to analyse the shark's unique constellation of spots and identify it, collects the date and location of the sighting (or solicits it from the video's uploader in the comments) and submits the data to the whaleshark.org database. The database then catalogues individuals using this unique computer-driven photo identification. You can read more from National Geographic about the Wildbook for whale sharks.

"We've been kind of stunned by how well the intelligent agent is doing its job and how much faster it's collecting data than a traditional human researcher," says Jason Holmberg, executive director of Wild Me. "The intelligent agent currently works in five languages and averages about 30 video analyses a day."[1]

"There's a perfect storm of AI and camera trap technology in terms of understanding animals from images," says Robert Long, a conservation biologist at Seattle's Woodland Park Zoo. Long has been collaborating with Microsoft to develop AI tools to help monitor rare carnivores in the Pacific Northwest using camera traps.

"I think it's literally a revolution underway in terms of auto-identification of animals, whether it's from still cameras or video."

AI can do what humans simply can't. Sift through massive amounts of data without any need to rest. Add in the ability to apply concepts at a much larger scale and more rapid pace – and you have the beginnings of something very exciting. True real-time conservation.

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