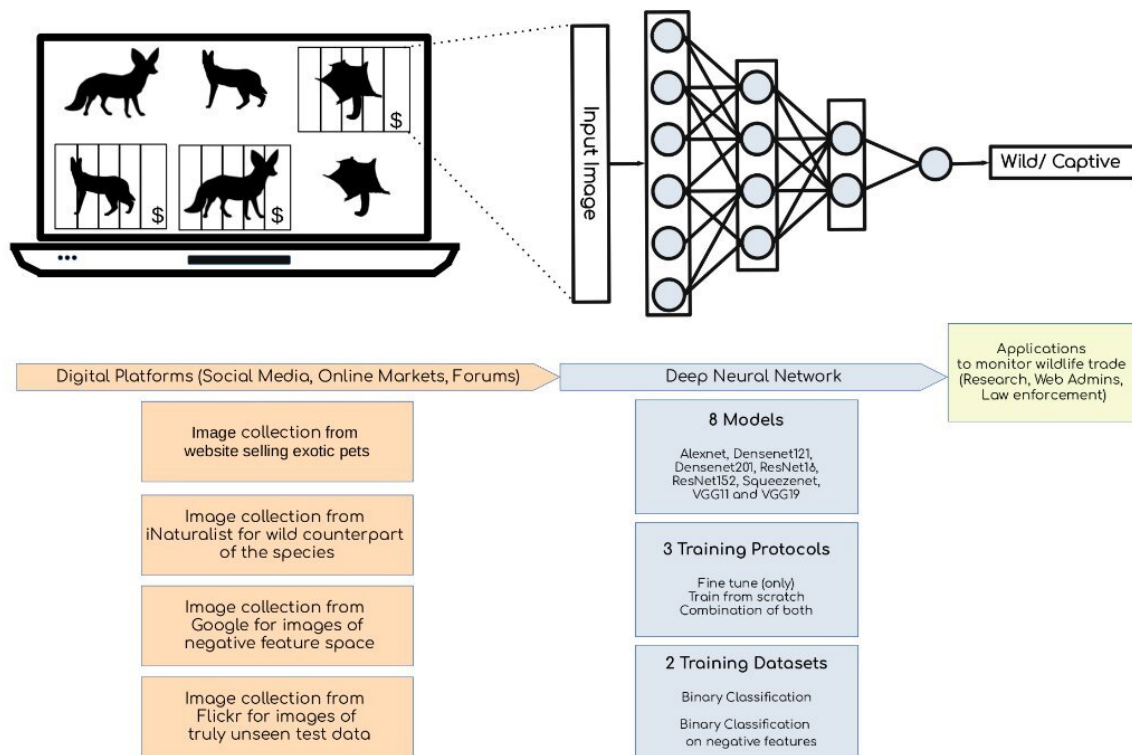


New AI methods to tackle the illegal wildlife trade on the internet

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Flow diagram depicting the process from collecting images to training and evaluating the model. Credit: *Biological Conservation* (2023). DOI: 10.1016/j.biocon.2023.109924

Scientists applied machine vision models and were able to deduce from the context of an image if it pertained to the sale of a live animal. These

methods make it possible to flag the posts which may be selling animals illegally.

Illegal wildlife trade is estimated to be a multi-billion dollar industry where hundreds of species are traded globally. A considerable proportion of the illegal wildlife trade now uses online marketplaces to advertise and sell [live animals](#) or [animal products](#) as it can reach more buyers than previously possible. With the trade happening across the internet it is extremely challenging to manually search through thousands of posts and methods for automated filtering are needed.

Compared to using computer vision to identify species from images, the identification of images related to illegal wildlife [trade](#) of species is rendered difficult by the need to identify the context in which the species are portrayed.

In a new article published in *Biological Conservation*, scientists based at the Helsinki Lab of Interdisciplinary Conservation Science, University of Helsinki, have filled this gap and developed an automated algorithm using machine learning to identify such image content in the digital space.

"This is the first-time machine vision models have been applied to deduce the context of an image to identify the sale of a live animal. When a seller is advertising an animal for sale, many times the advertisement is accompanied with an image of the animal in a captive state. This differs from non-captive images, for example a picture of an animal taken by a tourist in a national park. Using a technique called feature visualization, we demonstrated that our models could take into account both the presence of an animal in the image, and the surrounding environment of the animal in the image. Thus, making it possible to flag the posts which may be selling animals illegally," says Dr. Ritwik Kulkarni, the lead-author of this study.

As part of their research, scientists trained 24 different neural-net models on a newly created dataset, under various experimental conditions. The top performing models achieved very high accuracy and were able to discern well between natural and captive contexts. Another interesting feature of the study is that the models were also tested and performed well on data acquired from a source unrelated to training data, therefore showing capability to work well to the identification of other content on the internet.

"These methods are a game changer in our work that seeks to enhance automated identification of [illegal wildlife trade](#) content from digital sources. We are now upscaling this work to include more taxonomic groups beyond mammals and to develop new models that can identify image and text content simultaneously," says Associate Professor Enrico Di Minin, the other co-author who heads the Helsinki Lab of Interdisciplinary Conservation Science.

More information: Ritwik Kulkarni et al, Towards automatic detection of wildlife trade using machine vision models, *Biological Conservation* (2023). [DOI: 10.1016/j.biocon.2023.109924](https://doi.org/10.1016/j.biocon.2023.109924)

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