



AI Guardian of Endangered Species



Machine learning and artificial intelligence help detect wildlife products traded illegally on online platforms. Pictures are identified and shared with law enforcement agencies for investigation and with e-commerce platforms to request removal.

What is the technology?

The technology detects suspected illegal traders selling illicit wildlife products online. Based on the classification method of convolutional neural network technology, the Artificial Intelligence (AI) Guardian on Endangered Species tool was trained by using the International Fund for Animal Welfare (IFAW)'s 100,000+ picture database in its first phase of testing to identify wildlife products illegally traded on internet platforms. The identified pictures will then be traced back to advertising links in the database, which in turn will be fed back to the relevant e-commerce platforms for removal and/or will be forwarded to law enforcement agencies for investigation.

Challenges remain with regard to the differentiation of products, e.g., the correct identification of ivory vs. porcelain products, which is why Baidu made the code and recognition model of the AI Guardian [publicly available](#), so that developers can contribute to its progress and also build their own innovative conservation tools on the platform.

What are the current applications of the technology?

The tool was launched in 2020, and as of 2021 the AI Guardian has helped recognize 7,548 images of wildlife illegally sold from about 300,000 images across different online platforms, which helped track 1,085 links related to Illegal wildlife trade. The AI Guardian tool has a 75% accuracy rate for recognizing images of elephant ivory, tiger fangs, skin, claws, and pangolin scales and claws. As this tool focuses only on identifying wildlife products, IFAW is collaborating with another company in developing an AI model to identify live animals.

Photos: © Gregoire Dubois | © Kelsey Green/Shutterstock



Image of pangolin product identified by the AI Guardian tool, showing the probability of the product being manufactured from pangolin scales.

Source: ©IFAW



Image of ivory product identified by the AI Guardian tool, showing the probability of the product being manufactured from elephant ivory. Source: ©IFAW

How is this technology combating wildlife trafficking?

Illegal wildlife trade (IWT) has been growing and shifting to online platforms over the years. Online sellers of illegal wildlife products employ many methods to avoid detection including the use of code words, only posting images, short videos, and livestreaming to showcase their goods. Therefore, the conventional methods of investigation using keyword searches fail to detect such advertisements. The AI Guardian of Endangered Species tool has been trained to detect pictures of endangered wildlife products being traded online using machine learning and AI. It improves the efficiency and coverage of regular online research efforts and helps law enforcement agencies and online e-commerce platforms remove the posts before anyone can purchase the product.

Website

International Fund for Animal Welfare

<https://www.ifaw.org/>

Baidu

<https://ai.baidu.com/tech/imagerecognition/animal>

<https://www.paddlepaddle.org.cn/>

About the Project/Organization

The tool was jointly developed by the International Fund for Animal Welfare (IFAW) and PaddlePaddle, Baidu's open-source deep learning platform, the first industrial-grade, fully-functional deep learning platform in China.

Additional Resources

[AI Guardian of Endangered Species recognizes images of illegal wildlife products with 75% accuracy rate \(2020\)](#)



AI Guardian of Endangered Species Factsheet

Number of projects/ places using this technology as of 2021-2022	The AI tool is currently used in mainland China for online IWT monitoring
Issues addressed	Wildlife trafficking
Species focus	Focus on ivory, big cats, and pangolins
Locations where technology is currently implemented in	Online platforms/websites
Data source	Analyzing/aggregating data from other sources (third- party tech company)
Current users	NGOs
Devices and Technologies Used	
Communication devices	Computers/laptops; database, cloud database
Detection devices	AI-powered tool to identify images of wildlife products from threatened species traded online
Infrastructure	Data storage platforms/cloud services; internet connectivity; electricity
Compatibility with other technologies	Artificial intelligence
Setup and Implementation	
Typical size of implementation	Not applicable
Duration from inquiry until set up	Variable
Costs	There are no costs for the user. The source code of this tool was publicly released on Github so this code can be used for free. The costs for the technology provider are about \$10,000–\$20,000 for continued monitoring of online illegal wildlife product ads
Operation	
Frequency of interaction with technology	Twice a week
Days per month for operation/analysis	Variable
Frequency of maintenance	Not applicable
Necessary expertise	Medium capacity (beginner-level computer skills and knowledge of database management)
Outputs	
Generated data	The identified illegal links/listings are reported to the relevant internet platforms and are deleted. If there are listings identified that concern serious trafficking, the information will be reported to law enforcement agencies for further investigation
Frequency of data analysis and reports	Monthly
Can output or data be integrated into other solutions	Yes