Ruth Thompson

Illegal wildlife trade is increasingly moving online, but for enforcement, identifying these products is like finding a needle in a haystack. I intend to develop tools that will help automatically identify elephant ivory being sold from the images used to advertise them.

Abstract

Identification of internet-based illegal wildlife trade through machine learning
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The trade in wildlife, including animals, plants, their parts and derivatives involves markets as diverse as fisheries, timber, medicines, foods and exotic pets. However, illegal wildlife trade can lead to the extinction of traded species and frequently impacts on non-targeted species through 'by-catch' and can also help spread infectious diseases. It is particularly pernicious as it widens corruption, fuels conflict and hinders development. The illegal wildlife trade is estimated to be worth up to $23 billion p.a.; overall, environmental crime is now the fourth most valuable form of crime after narcotics, counterfeiting and human trafficking.(Nellemann et al. 2016) Global online trade, including in wildlife, is growing. It allows small business to prosper and reach a global audience; however, it also masks increasing numbers of illegal transactions. It is clear that, with the increased publicity on the illegal wildlife trade and a push to enforce and expand current local and national legislations, illegal wildlife trade is increasingly moving online. However, the identification of illegally traded items can be challenging and is largely undertaken by law enforcement manually, scrolling through pages and inspecting each individual item.(Alfino & Roberts 2018, Hernandez-Castro & Roberts 2015)
This project aims to develop novel insights into the detection of illegal wildlife trade being sold over the internet. Specifically, the student will employ innovative algorithms based on machine learning (and potentially Deep Learning) to identify species for sale from images and the metadata associated with online adverts. This will allow for the automated identification and reporting of illegal wildlife trade on sale via online marketplaces, social networks and the darkweb. The results of this project will be of particular interest to law enforcement and governments attempting to curb these and other illegal activities.
References
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