THE NEW DOMAIN OF INTERNET OF THINGS AND BIG DATA: WILDLIFE NUTRITION

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Abstract

The revolution of data and connectivity of the 21st century left behind one of the most fragile parts of our planet and yet to be connected. According to the International Union for the Conservation of Nature (IUCN) 120,372 species were assessed in 2020, with 20% categorized as "data deficient". When a species is categorized as data deficient, that prevents the species from appearing in the Red List of endangered animals, and, therefore, that species does not receive the attention needed for preservation and conservation. Many wild animals lack data for a better understanding of their habits, anatomy, physiology, and health. Some species, already extinct in the wild, have been preserved by zoos and for many, zoos are becoming their last refuge. The development of novel technologies through data and information analytics may enable conservation professionals to understand animal behavioral and physiological responses with a depth never studied, thus playing an important role in species conservation.

Novel technologies developed for wild animals and, where possible, validated with their counterparts under human care, may analyze and elucidate their feeding patterns, better understand their unique nutrient needs and their physiology thus creating new insights in their nutritional ecology. Combining machine learning and data science to support and advise nutrition would allow real-time validated nutrition recommendation tailored for individuals based on their feeding habits, preferences, health status, symptoms, patterns, physical activity, health history, and sleeping habits. This information would provide a deep insight in animal nutrition identifying what, when, and why to feed. The data collected from animals under human care or in the wild may help to understand not only the unique nutrition of animals specifically but also the relationship between species, age, gender, disease states, life cycle, etc. However, how to collect this data with minimal impact to the animal's wellbeing and patterns, how much data to collect, how fast to collect the data, and how to transform this data into knowledge to fight extinction is the next step for Conservation Engineering.