"Machine Learning for Ecology"

ABSTRACT

A recent report issued by the WWF states that there has been a catastrophic decline in wildlife population in recent years. A large number of species are threatened with extinction due to a number of factors such as over-exploitation of resources, deforestation and climate change. Certain species have been placed on the IUCN Red List for several years, but further conservation efforts are still urgently required to ensure the survival of the remaining individuals. While it is true that the number of individuals in threatened populations is decreasing, there have been considerable conservation efforts to put a halt to this. Ecologists, researchers, and rangers closely monitor the populations, in certain cases by placing microphones and camera-traps into the environment and searching through the recorded audio/images for the species of interest. This non-invasive approach comes with a cost in that huge datasets of audio or images are produced and is difficult to manually process. This talk will discuss efforts in using machine learning to monitor certain species (IUCN Red List vulnerable and critically endangered).

The theme of this colloquium is: "Helping Africa Listen to Herself" where I will showcase some of our latest efforts as well as efforts by my students in producing machine learning models for conservation ecology.

BIOGRAPHY

Dr Emmanuel Dufourq, from Mauritius, is a lecturer in data science at Stellenbosch University in the department of Industrial Engineering and School for Data Science and Computational Thinking. He is the AIMS-Canada junior research chair in data science for climate resilience. He obtained a PhD (applied mathematics) from UCT and was a postdoctoral fellow at AIMS South Africa where his primary focus was on passive acoustic monitoring of various critically endangered species around the world including the world's rarest primate. He co-founded EdgeAcoustics NPO, a non-profit organisation for which the focus is on assisting researchers in Africa to build machine learning models for passive acoustic monitoring. His research interests include evolutionary computation, neuro-evolution, neural networks, bioacoustic monitoring, and machine learning for conservation ecology.

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