Project Title

Optional Subtitle

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MSc Data Science & Machine Learning

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Abstract

Summarise your report concisely.

Contents

Chapter 1

Introduction

Birds play a crucial role in ecosystems around the world. They form an important link in the food chain, pollinate plants, and even plant trees [1]. The quantity and diversity of birds observed in an area can therefore be seen as a key indicator of the strength of its ecosystem.

Aside from being important ecological agents, birds also colour our lives with their sights, sounds and behaviours. The community of birdwatchers, known colloquially in the U.K. as 'twitchers', has grown considerably over the past few years. The Royal Society for the Protection of Birds (RSPB) reported a 70% increase in their website views over the first lockdown, with more than 50% of those views on pages looking at bird identification. The Bird Bird Garden Watch, an annual event which encourages people to note bird sightings in their own residences, brought in 1 million participants in January 2021, more than double the previous year's tally. As such there is a growing commercial demand for easily accessible bird identification tools.

Birds are typically shy and protective creatures and tend to reside out of harm's way in shrubs, trees and nests, and therefore are usually heard but not seen. The consequence of this is that birds are typically identified through their vocalizations, known as birdsong, rather than their visual sighting. Birdsong used for identification is usually recorded on microphones that may be running for a long time, so recordings may be corrupted from a wide range of sources, such as ambient background noise, changes in birdsong amplitude, long periods of silence, and vocalizations from other birds. There is therefore a need for robust birdsong identification tools that can handle these corruptions and that require minimal human intervention in order to classify unknown birdsong.

As with most machine learning classification problems, the work boils down to two key components. The first is feature extraction, that is, given an input signal usually in the form of an amplitude varying over time, how

There has been numerous research

Chapter 2

Background & related work

Chapter 3

Methodology

Chapter 4

Extensions of methodology

Chapter 5

Conclusion

Bibliography

[1] Richard K Broughton, James M Bullock, Charles George, Ross A Hill, Shelley A Hinsley, Marta Maziarz, Markus Melin, J Owen Mountford, Tim H Sparks, and Richard F Pywell. Long-term woodland restoration on lowland farmland through passive rewilding. *PloS one*, 16(6):e0252466, 2021.