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FACULTY OF ENGINEERING TECHNOLOGY

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Counting shells

Are current neural networks performant enough to count various types of shells in an uncontrolled environment

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Summary

Every year the Flemisch Institute for the sea organises a shell counting day to map the diversity of our seaside. Thousands of volunteers go to the beach to count and classify shells. In this thesis we will try to automate this process by using neural networks. The goal is to be able to count the shells in an uncontrolled environment so the volunteers would only have to take pictures of the shells and the neural network would do the rest.

Of course this is not a trivial task, as the shells are not always in the same position, the lighting conditions are not always the same and the shells are not always of the same size.

Abstract

Het extended abstract of de wetenschappelijke samenvatting wordt in het Engels geschreven en bevat 500 tot 1.500 woorden. Dit abstract moet niet in KU Loket opgeladen worden (vanwege de beperkte beschikbare ruimte daar).

Keywords: Voeg een vijftal keywords in (bv: Latex-template, thesis, lang document, ...)

Contents

Chapter 1

Introduction

1.1 Background

In this section we'll talk about the background of the problem we're trying to solve. We'll talk about the way things are done currently and why we think improvements can be made.

1.2 Methods

Here we'll about the methods of counting that are used and how they could be applied to our problem. Taking into account the absense of a dataset, we'll narrow the options down to few-shot learning.

1.3 Objectives

In this section we'll talk more about the goals. We'll talk about the dataset we'll be testing our approach on and the metrics we'll be using to evaluate our approach.

Chapter 2

Litature Review

2.1 State of the art/related work

There are plenty of papers about counting the number of objects in an image, with plenty of different approaches/architectures. As `https://openaccess.thecvf.com/content/CVPR2022W/L3D-IVU/papers/Ranjan_Vicinal_Counting_Networks_CVPRW_2022_paper.pdf` situates itself in quite a similar position as to our problem, using its references as a reference could be a good idea.

2.2 Proposed approach

In this section we'll go into more detail about the approach we'll be taking. This will include a number of subsections, each describing a different aspect of the approach.

2.2.1 Few-shot

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