

# Algorithm Design and Theoretical Basis Description

## Technical Note D2

Krasen Samardzhiev, Barbara Metzler, Martin Fleischmann, Dani Arribas-Bel

### Table of contents

<b>1</b>	<b>Exective summary</b>	<b>2</b>
<b>2</b>	<b>Theroetical basis</b>	<b>2</b>
2.1	Morphometric Classification Homogenisation . . . . .	2
2.2	AI Modelling using Satellite Imagery . . . . .	2
<b>3</b>	<b>Algorithm Design</b>	<b>2</b>
3.1	Morphometric Classification Homogenisation . . . . .	2
3.1.1	Model architecture . . . . .	2
3.1.2	Data preprocessing . . . . .	2
3.1.3	Morphometric characterisation . . . . .	2
3.1.4	Target labels . . . . .	2
3.1.5	Train/test/validation split . . . . .	2
3.1.6	Training and validation . . . . .	2
3.2	AI Modelling using Satellite Imagery . . . . .	2
3.2.1	Data preprocessing . . . . .	3
3.2.2	Train/test split . . . . .	3
3.2.3	Unbalanced dataset . . . . .	3
3.2.4	Model architectures . . . . .	3
3.2.5	Evaluation Metrics . . . . .	3
3.2.6	Preliminary results . . . . .	3
<b>4</b>	<b>Discussion</b>	<b>3</b>
<b>5</b>	<b>Next steps</b>	<b>3</b>

# **1 Exective summary**

Summary goes here.

## **2 Theroetical basis**

Kind of lit review I suppose? Probably could be adapted stuff we have in the proposal.

### **2.1 Morphometric Classification Homogenisation**

A brief theoretical background.

### **2.2 AI Modelling using Satellite Imagery**

A brief theoretical background.

## **3 Algorithm Design**

### **3.1 Morphometric Classification Homogenisation**

#### **3.1.1 Model architecture**

One paragraph summarising the whole thing.

#### **3.1.2 Data preprocessing**

#### **3.1.3 Morphometric characterisation**

#### **3.1.4 Target labels**

#### **3.1.5 Train/test/validation split**

#### **3.1.6 Training and validation**

### **3.2 AI Modelling using Satellite Imagery**

Most of the stuff from `technical_part_turing.qmd` except the data description.

**3.2.1 Data preprocessing**

**3.2.2 Train/test split**

**3.2.3 Unbalanced dataset**

**3.2.4 Model architectures**

**3.2.4.1 Baseline approach (Approach A)**

**3.2.4.2 Segmentation (Approach B)**

**3.2.4.3 Classification (Approach C)**

**3.2.5 Evaluation Metrics**

**3.2.6 Preliminary results**

**4 Discussion**

**5 Next steps**