Development of Mobile Application to Estimate Soil Properties Using Munsell Soil Colour

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Background

Soil **colour** is one of the most important factors in agriculture for determining and **monitoring** soil health and quality. It can also be used to classify soil properties and types such as soil colour, moisture, and carbon.

The traditional approach of soil characterization is done in laboratories which is often **inconvenient, time-consuming,** and **costly** for farmers. For this purpose, archaeologists, scientists, and farmers widely use Munsell Soil Colour Book (MSCB) to evaluate soil colour.

The process of determining soil colour from the book is also **subjective** and **error-prone** as it depends on the user's perceptions.

Research focus

This study aims to estimate **soil properties** using smartphones.

Smartphones are currently the most widely used devices, with most having high-quality cameras.

This research is using smartphones to **monitor soil health** by estimating soil properties from mobile-captured images.

This is done using a smartphone camera and various **mathematical and deep learning techniques** by considering the Munsell Soil Colour (MSC).

Outcomes

The outcome of this research is a **mobile application** for digital **soil classification**.

Soil scientists, archaeologists, and farmers will be able to get soil information using their own smartphones.

By **taking photos of soil** and uploading these to the app, users will be able to get the top ten closest soil colour matches and a multitude of other soil properties and related information.

This will provide a **convenient** and **inexpensive** solution to the existing issues of traditional approaches to soil characterization.

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