

Applying Watson Capabilities To Detect Geology Rock Material From An Image

1. INTRODUCTION

a. Overview

The "Applying Watson Capabilities To Detect Geology Rock Material From An Image" is a webapp built using deep learning and IBM Watson Capabilities to detect the type of rock material(Blue Calcite, Limestone, Marble, Olivine, Red Crystal) with image as input.

b. Purpose

Mining companies can use this app to know the type of rock material found in the mines. This comes handy in places where human reach is difficult. At such times this can be integrated to an automated machine so that it can take snaps of the rock then the image is analyzed.

2. LITERATURE SURVEY

c. Existing problem

The current system of detecting rock is gathering the sample of the rock from the mine and it is sent to the lab for testing, there it undergoes for testing for few days. Based on the reports from the tests the type of rock and its properties are decided and further decision is taken.

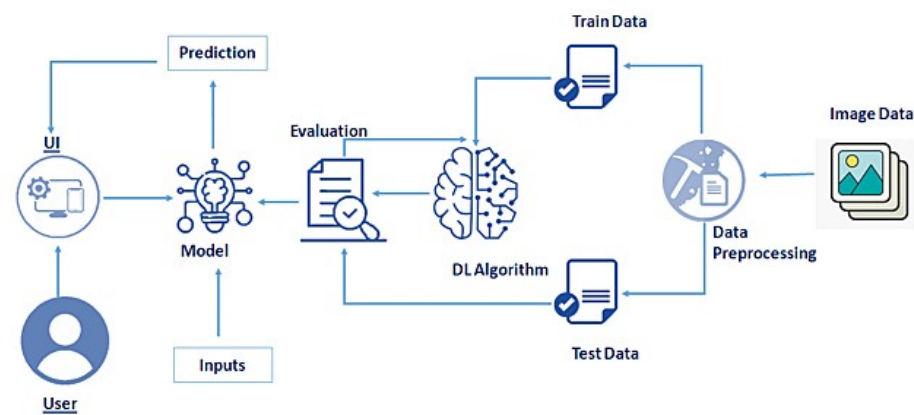
d. Proposed solution

An idea made to solve this sort of problem is the "Applying Watson Capabilities To Detect Geology Rock Material From An Image." The webapp takes image as input and based on the features of the input image it decides the type of the rock material

it is and its properties. This is possible by training the model with train data that is images with labels showing the features of materials like colour, texture, surface etc.,

3. THEORITICAL ANALYSIS

a. Block diagram



b. Hardware and Software Requirements

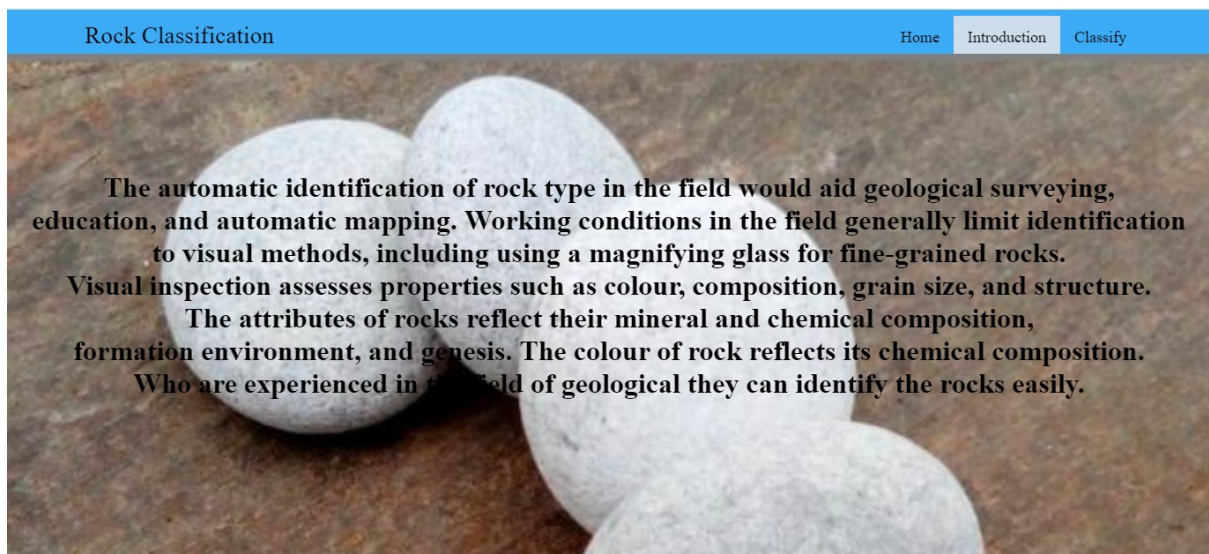
- A Device with a constant internet connection.
- IBM Cloud
- IBM Watson
- Flask

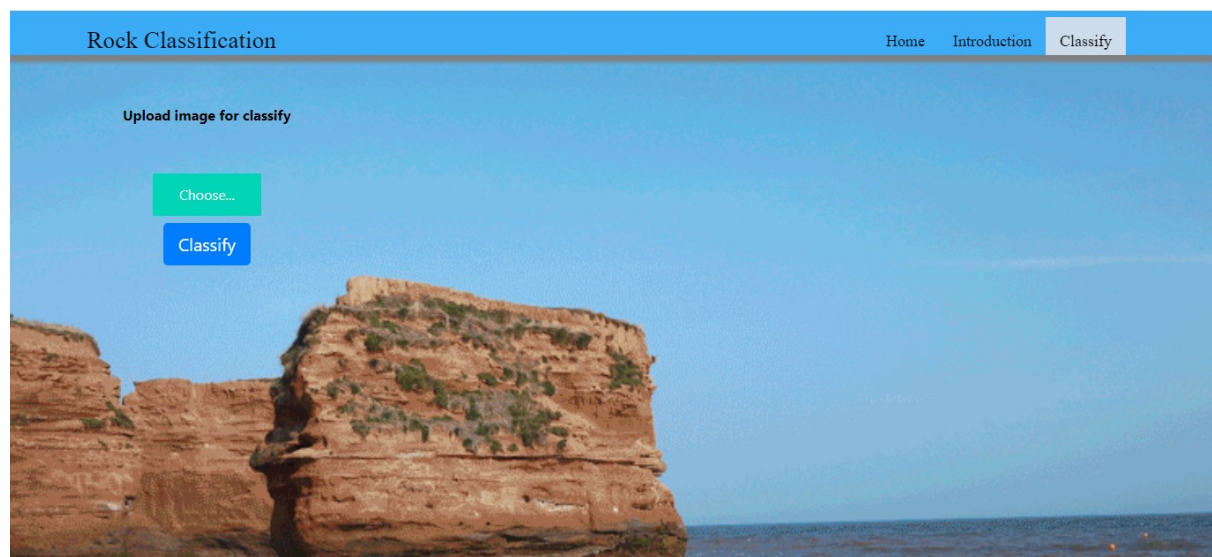
4. EXPERIMENTAL INVESTIGATIONS

Up on several investigations it is found that miners are happy to use the rock detection using the image rather than traditional lab method as this is time consuming and cost efficient and moreover there is no actions that harm any of the nature, using this is very easy. Also in future the scope of the model can be extended beyond

imagination. Based on the above investigation this idea is useful to put into use.

5. Result







Rock Classification
Home
Introduction
Classify

Upload image for classify

Choose...

Rock Classified is :
Marble

CRYSTAL NAME: MARBEL

COLOR: White, pink.

LOCATION: Italy, Spain, India, and China.

TEXTURE : Granular



HARDNESS: 3 Hardness

CHEMICAL COMPOSITION: Calcite, Dolomite, Serpentine.

Rock Classification
Home
Introduction
Classify

Upload image for classify

Choose...

Rock Classified is :
Olivine

CRYSTAL NAME: OLIVINE

COLOR: Green, yellow-green

LOCATION: Canada

TEXTURE : Granular

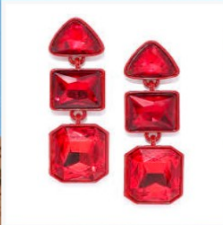

HARDNESS: 6.5 and 7.0 Hardness

CHEMICAL COMPOSITION: Forsterite, Fayalite

Rock Classification
Home
Introduction
Classify

Upload image for classify

Choose...

Rock Classified is :
Red Crystal

CRYSTAL NAME: RED CRYSTAL

COLOR: Red

LOCATION: Switzerland

TEXTURE : Crystal

HARDNESS: 6.5-7.5 Hardness

CHEMICAL COMPOSITION: Alumina

6.ADVANTAGES AND DISADVANTAGES

a. Advantages

- Easy to use.
- Time efficient.
- Cost efficient.
- Safe to use.

b. Disadvantages

- Results may not be perfect.
- New rock cannot be identified.
- Further improvement is needed.
- Images should be detailed.
- Some knowledge on technology is needed to use.

7. APPLICATIONS

- Mining
- Rock Collection
- Research

8. CONCLUSION

The “Applying Watson Capabilities To Detect Geology Rock Material From An Image” was developed to make detection of rock material from an image without any lab tests.

The following conclusions can be deduced from the development of the project:

- Onspot detection
- Easy to use
- Does not require any process

9. FUTURE SCOPE

1. Many more features can be integrated to give a better user experience to the customer, such as automating the image capture by attaching it to a machine that can go to quarry easily and reach places which are difficult for a man to reach. Also the accuracy of the model can be increased by taking extra inputs.

10. BIBILOGRAPHY

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<https://github.com/SmartPracticeschool/IIIPS-INT-3008-Rock-identification-using-deep-convolution-neural-network>

https://github.com/amritanjali123/Rock_classification

[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/319590805_Rock_images_classification_by_using_deep_convolution_neural_network)

[319590805_Rock_images_classification_by_using_deep_convolution_neural_network](https://www.researchgate.net/publication/319590805_Rock_images_classification_by_using_deep_convolution_neural_network)

Appendix

i. Source Code

<https://github.com/smartinternz02/II-GuidedProject-98213-1658723149>

ii. Video Link

