TERRAIN CLASSIFICATION USING MACHINE LEARNING

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Abstract:

Classification using AI is a field that is growing as the machine learning, AI and deep learning are expanding, and so engineers and programmers have started using these technologies to help them in many ways, we will be designing a program using machine learning, it works by giving a picture to the AI that we will design and train using different methods and tools, WSN deployment can also be used to calculate path loss for each terrain. This project can help many people that are working in the geological field by saving time and re

Background Knowledge:

Remote field navigation is a very important field of studies in todays world, it can be implemented in many ways which include sending robotics to different areas in order to identify and classify them, the same goes for WSN deployment, The main function of WSN is to process extracted data and to transmit it to remote locations. A large number of sensor nodes are deployed in the monitoring area. Therefore, deploying the minimum number of nodes that maintain full coverage and connectivity is of immense importance for research, and our project can help achieve many of these goals by identifying different terrains in many areas.

Problem Statement:

The main function of WSN is to process extracted data and to transmit it to remote locations. A large number of sensor nodes are deployed in the monitoring area. Therefore, deploying the minimum number of nodes that maintain full coverage and connectivity is of immense importance for research, and our project can help achieve many of these goals by identifying different terrains in many areas.

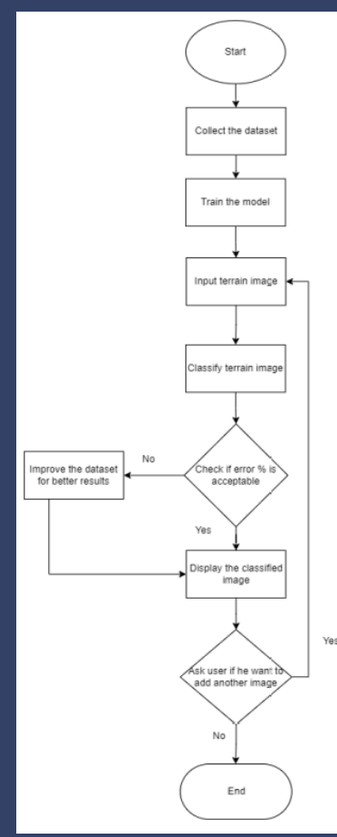
Tools:

jupyter

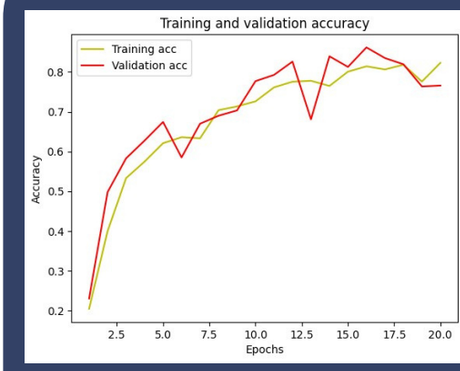
orange
DATA MINING

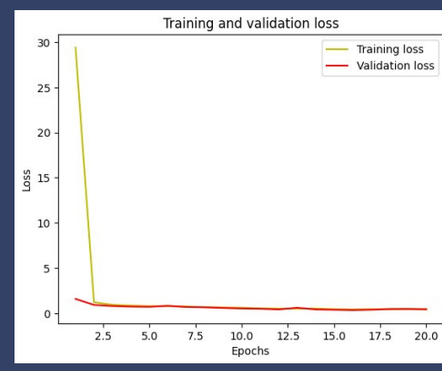
lobe

Methodology:



Results:





Future Work

- Add more complex terrain attributes such as caves or rivers for example
- Use a more realistic dataset
- Develop a python code for path loss for WSN deployment

Conclusion:

Our project of terrain classification can be implemented in many applications which includes landscape scanning or it can be used to help robots that are sent to remote areas to help them understand the terrain better, there are many other fields and applications that the project can be implemented on.The goal of the project was to use it for WSN deployment to calculate the path loss for terrains, but unfortunately we weren't able to achieve that goal, however, we managed to make a very accurate model using the tools we mentioned which can also be used for different projects. and we will work on for WSN deployment in the future and we can further enhance and train the model by adding more specific terrains, such as rivers or valleys for example.

Contact Information

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