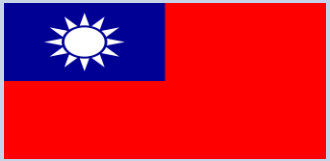

Land Use and Land Cover Classification of Satellite Images Using Convolutional Neural Network

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Adviser: Prof. Yuri Pusparani & Dr. Chi-Wen Lung

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2024 International Conference in Artificial Intelligence

About Me

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2022-present

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Artificial Intelligence are diverse, so as researchers!

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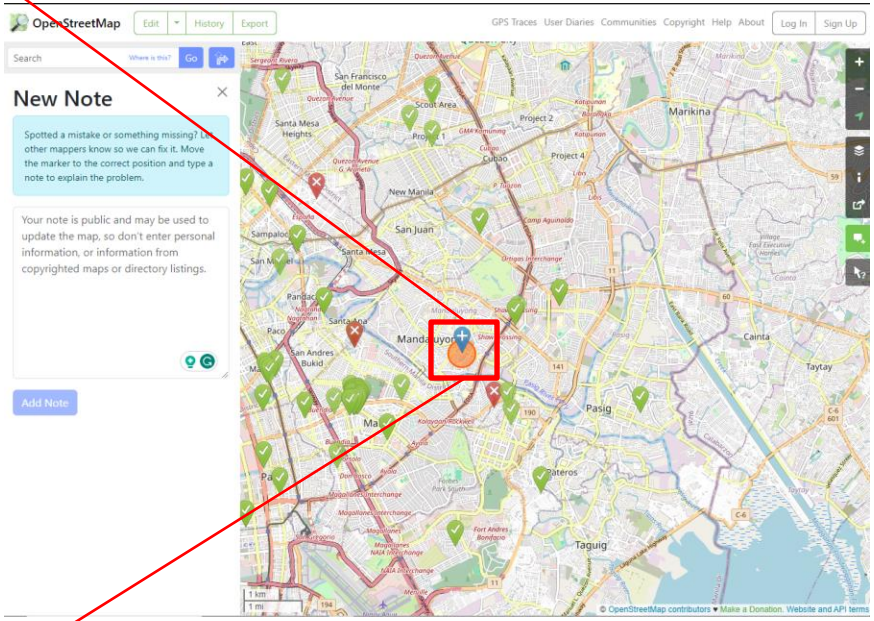
Training
Data Science and Analytics
2023
Mentor: Engr. Sherwin Palayo

My University



Outline

1 Self Introduction

2 What are Remote Sensing, Land Use & Land Cover?

3 Remote Sensing is Complex but it's Amazing!

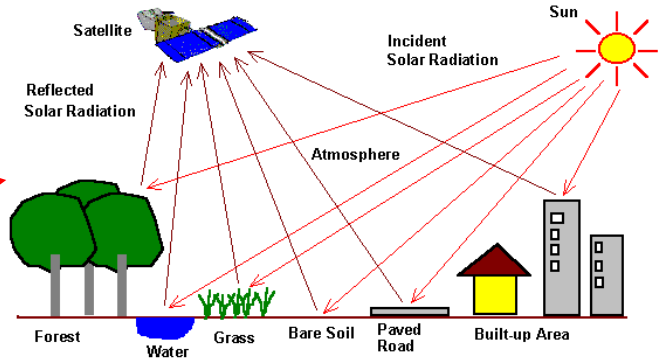
4 Findings

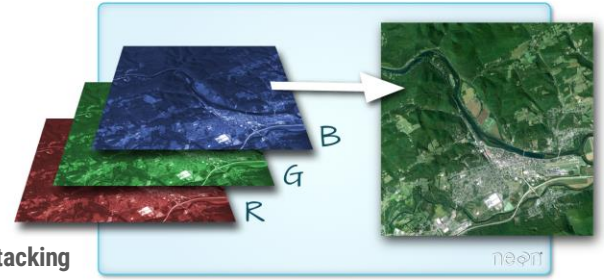
5 Challenges in Remote Sensing!

What are Remote Sensing, Land Use & Land Cover?

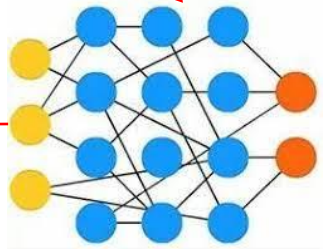
Introduction

Hypothesis



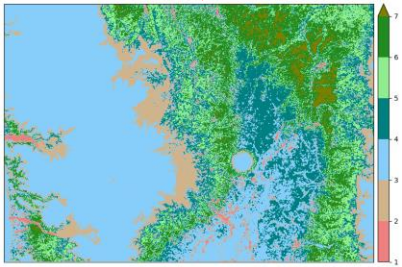


Multiple Band Stacking

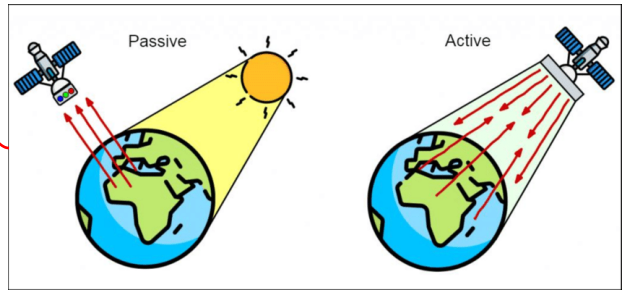


Machine Learning

(CRISP, 2023)
(Abeer, 2022)
(Vali et al. 2020)

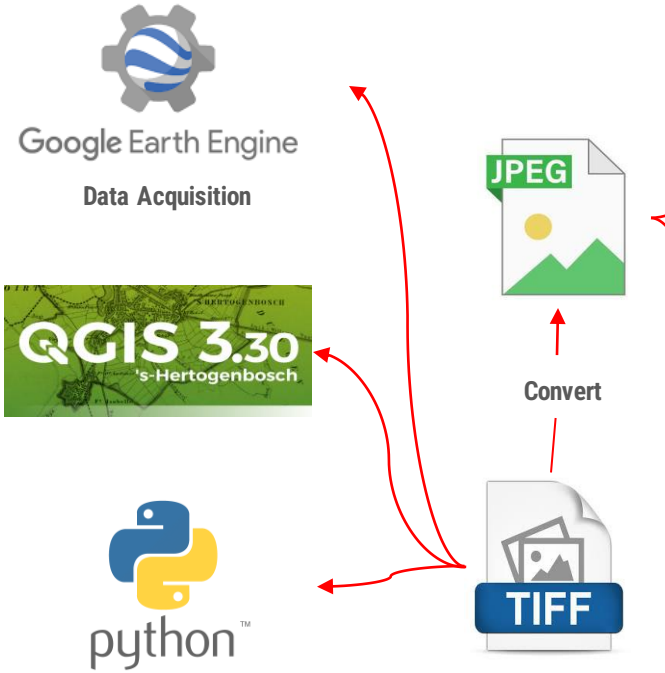


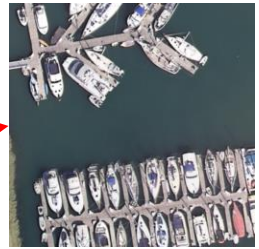
Classification



Remote Sensing is Complex but it's Amazing !

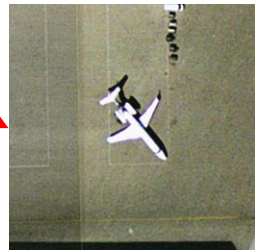
Materials - Open-Source Geospatial





Water

Vegetation



Impervious Surfaces

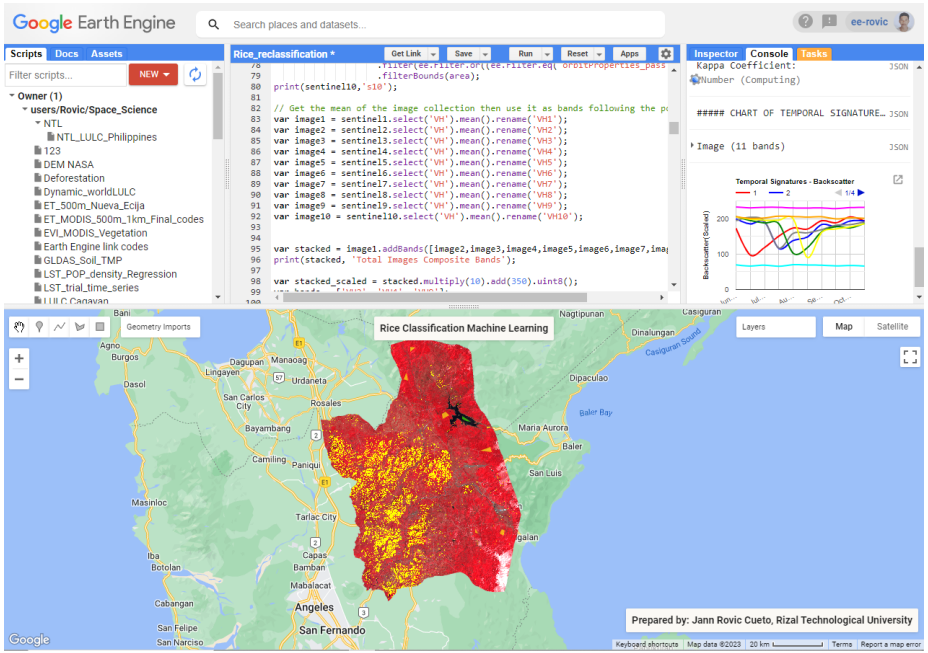
Pervious Surfaces

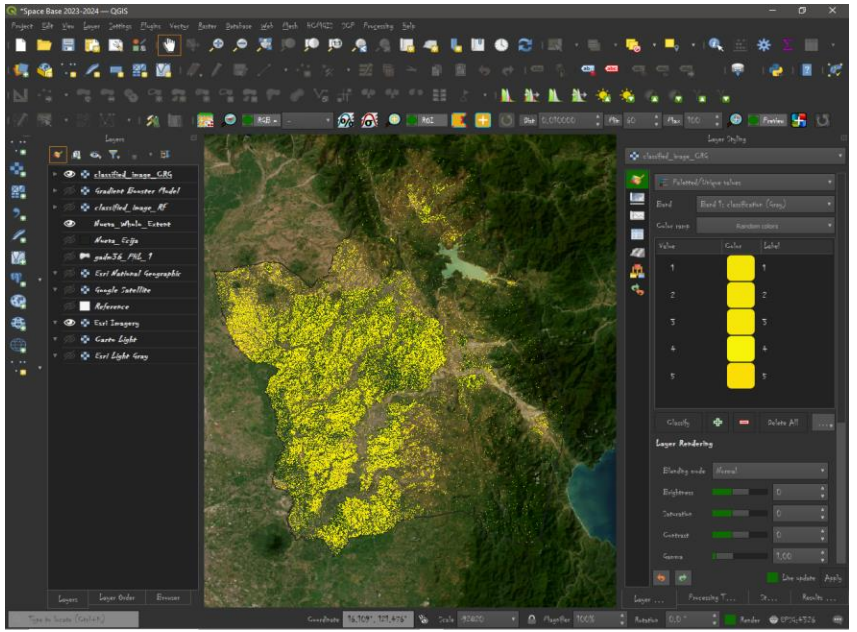
=

Train	960
Validation	240
Total Images	1200

Remote Sensing is Complex but it's Amazing !

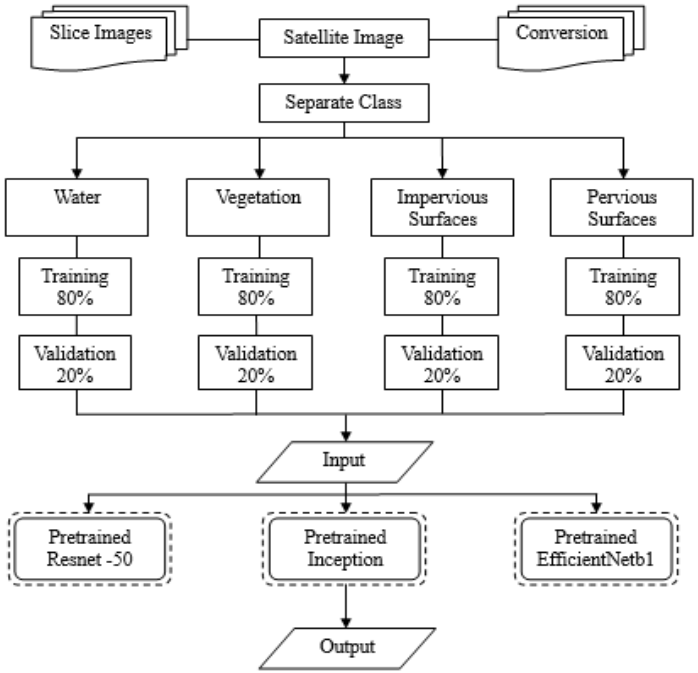
Materials – Platform Looks Like!

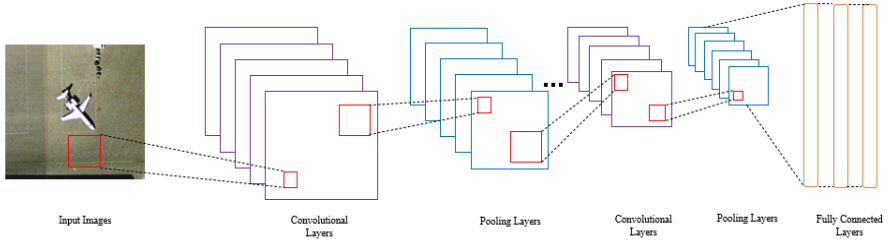




Remote Sensing is Complex but it's Amazing !

Methods

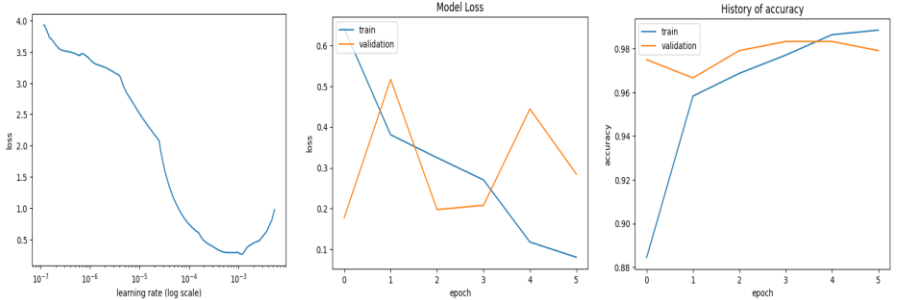




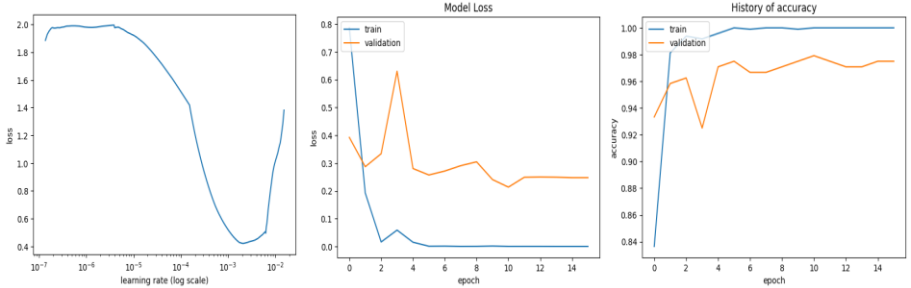
(Zhou et al., 2017)

Findings

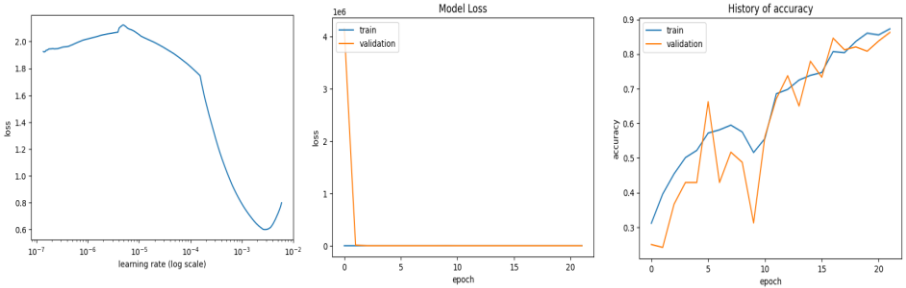
Results and Discussion



A) Pre-Trained ResNet 50



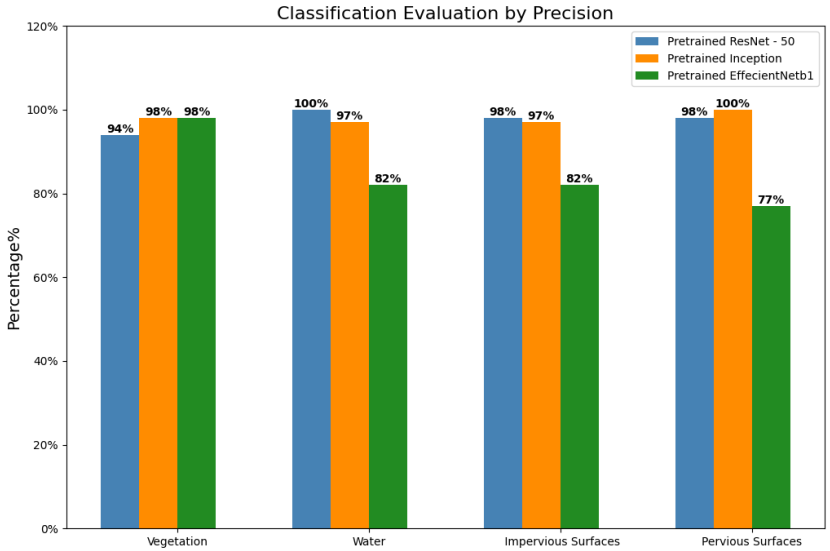
B) Pre-Trained Inception

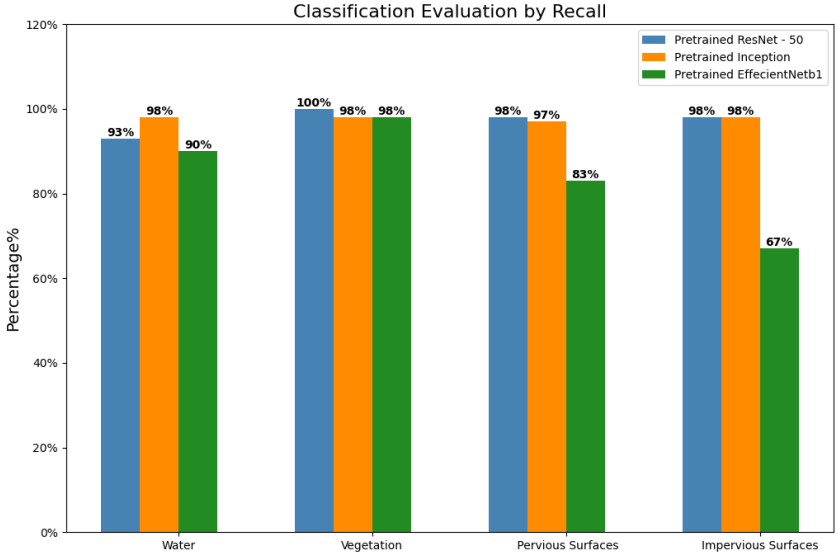


C) Pre-Trained EfficientNetb1

Findings

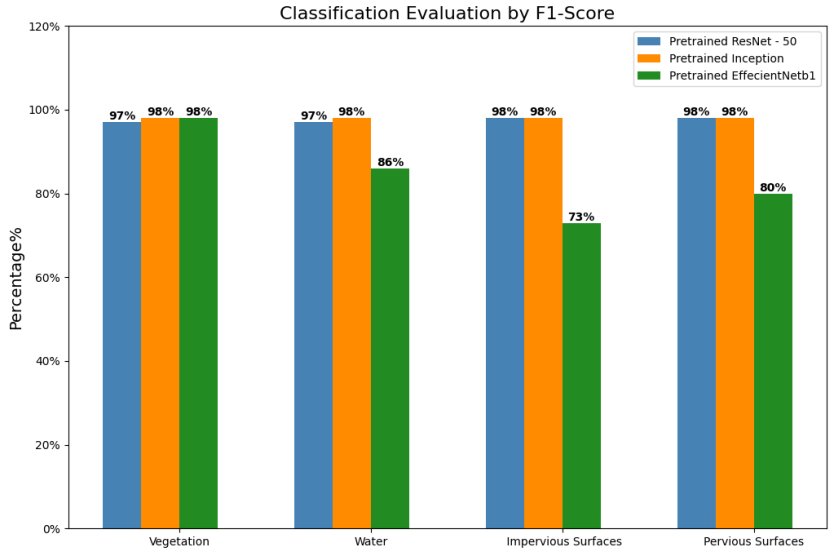
Results and Discussion

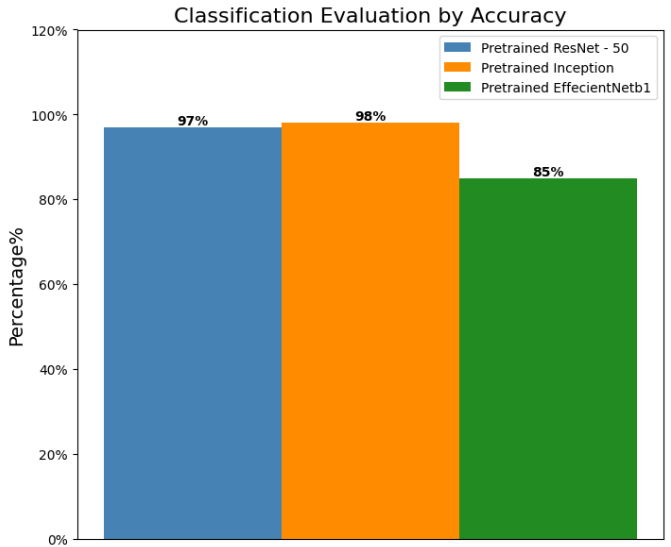




Findings

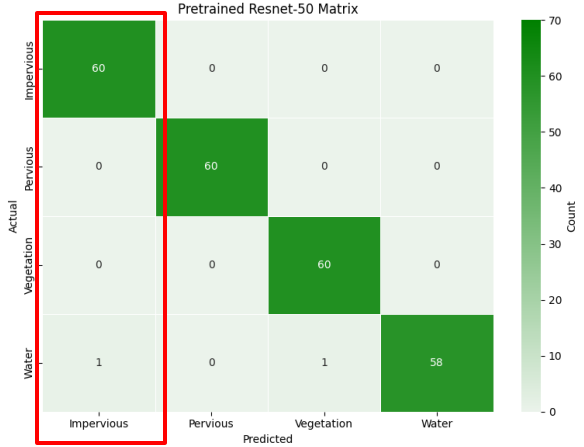
Results and Discussion



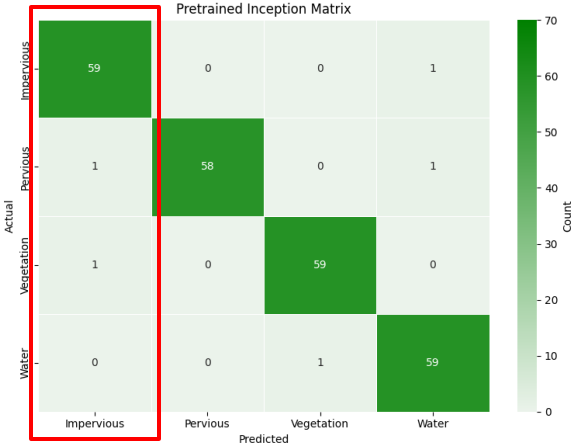


Findings

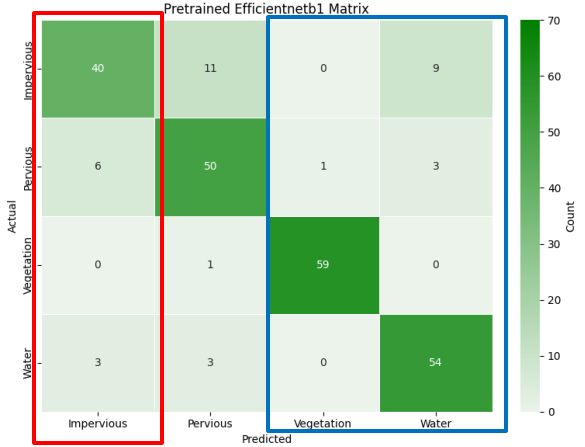
Results and Discussion



A



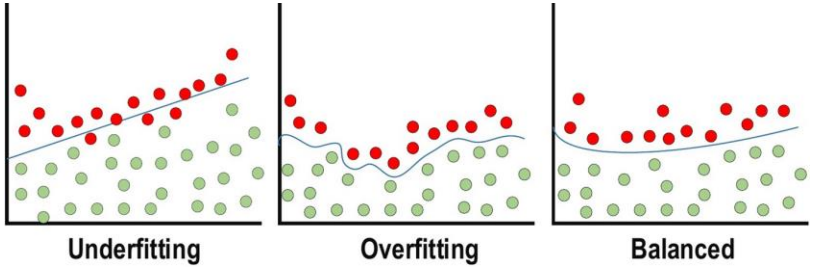
B

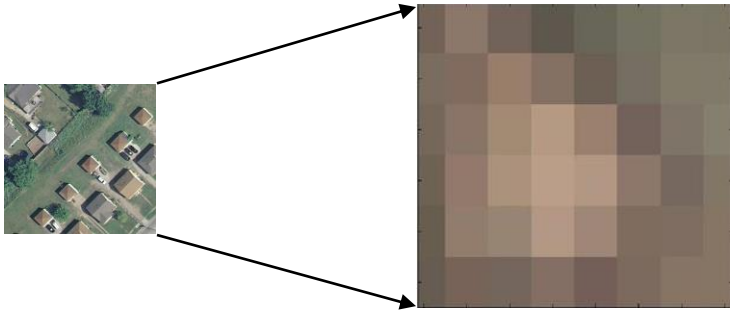


C

Challenges in Remote Sensing !

Limitations





(Shorten and Khoshgoftaar, 2019)
(Alzubaidi et al., 2021)

- A potential limitation of our study is the risk of overfitting, where our model, due to its complexity, may have learned specific patterns in the training data that do not generalize well to new instances. Although we implemented early stopping as a preventive measure, relying solely on this strategy may introduce constraints on the model's adaptability to unseen data.

Challenges in Remote Sensing !

Conclusion

- This study investigate the potential of three deep learning models for classifying land cover and land use patterns from remote sensing images. All models demonstrated promising accuracy, with the pre-trained Inception model achieve the highest accuracy of 98%. This suggests that deep learning holds significant potential for advancing transfer learning in similar tasks within the field of remote sensing. Furthermore, the study's findings can contribute to our understanding of environmental changes by employing the powerful analytical capabilities of these models. Additional research could delve deeper into specific applications for this technology, such as monitoring deforestation or tracking urban expansion.

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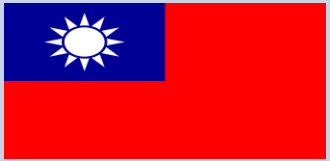

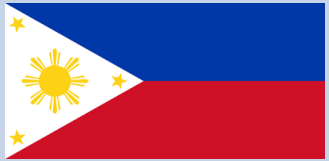

Thank you!

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