[JIKI] Editor Decision

1 pesan

Journal Administrator <jiki@cs.ui.ac.id> 17 Juli 2023 pukul 11.31
Kepada: Herlawati Herlawati <herlawati@ubharajaya.ac.id>, Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Herlawati Herlawati, Rahmadya Trias Handayanto:

We have reached a decision regarding your submission to Jurnal Ilmu Komputer dan Informasi, "SEMANTIC SEGMENTATION OF LAND COVER FROM MULTISPECTRAL IMAGES".

Our decision: Major revisions

We can accept your paper if all the reviewers' concerns are adequately addressed. Please submit your revision through the system and email (in case you have trouble when submitting the revision through the system) before **30 July 2023**. To fasten the second round of the review process regarding your revision later, please attach the reviewer response form to explain how you address the reviewer comments/requests and merge them in the same file with your paper revision (please download the template from https://docs.google.com/document/d/17TEIxI4bgMy-AIb36UDTptoXYvYKKsEy/). Due to your paper will be reviewed again in the second round, please remind that your paper must still be blind (no author name and affiliation in the revised paper). If you have any problems or questions about the submission revision, please do not hesitate to contact us.

Journal Administrator
Faculty of Computer Science Universitas Indonesia
jiki@cs.ui.ac.id

Reviewer A:
Recommendation: Resubmit Elsewhere

I. Reviewer's Confidence

Medium

II. Quality of The Article

1. Originality: How would you rate the originality of the paper?

Adequate

2. Significance of Topic: Is this topic gives significant contribution?

Adequate

3. Technical Quality: How would you rate the technical quality of this paper?

Adequate

4. Presentation: How would you rate the presentation (readibility and organization) of this paper?

Adequate

5. Literature: Does the paper give complete literature review?

Adequate

6. Overall Rating: Do you recommend acceptance or rejection?

Weak Reject (-1)

III. Comment About the Paper

In this manuscript, the authors compare DeepLabV3+ and U-Net for semantic segmentation using multispectral images from Landsat-8. They utilize a Landsat-8 dataset collected from Bekasi and Karawang for validation. However, the novelty of the manuscript appears limited.

Major Points:
Dataset:
* The authors do not specify the characteristics or total areas for the training, testing, and validation sets.
* The section on material and methods lacks a clear explanation of the data preprocessing after acquisition. It would be helpful to include a flow diagram depicting the process.
Model:
* The modifications to the model itself are not significant, and there is a lack of analysis on other hyperparameters and settings, such as learning rate, total number of layers for each architecture, and whether the pretrained models (such as ResNet-18 for DeepLabV3) were activated or frozen.
* The authors should mention previous works that can serve as baselines for comparison or propose their own baseline.
Evaluation:
* Evaluating the performance of the models based solely on accuracy without knowing the exact number of data points for each class is challenging. The authors should include additional metrics such as Intersection-over-Union (IoU), Dice Similarity Score (DSC), and sensitivity, especially when dealing with imbalanced datasets.
* The authors should perform tests such as t-tests to demonstrate that DeepLabV3+ outperforms U-Net significantly.
* To compare the segmentation mask predictions, the authors should visualize the ground truth masks with the classes (not binary) for better comparison.

Minor Points:
Quality of Paper:
* Figures need improvement and should be reworked to enhance understanding and exported in better resolution.
* Key modifications and analyses should be highlighted in the introduction section.
* Displaying the performance of the experiment model during training, validation, and testing would be more informative.
Quality of References:
* References should be adjusted.
Clarity of Presentation:
* A thorough review of the use of the English language is necessary, as there are numerous typos and grammar issues.
* Equation style can be improved.

Overall, while the paper addresses an interesting topic, fine-tuning existing models with local data does not contribute significantly. Therefore, in my opinion, the article requires substantial revisions, and I suggest that the authors invest more effort in strengthening the foundation of their work before resubmitting it.

Reviewer B:
Recommendation: Revisions Required

I. Reviewer's Confidence

High

II. Quality of The Article

1. Originality: How would you rate the originality of the paper?

Adequate

2. Significance of Topic: Is this topic gives significant contribution?

Adequate

3. Technical Quality: How would you rate the technical quality of this paper?

Adequate

4. Presentation: How would you rate the presentation (readibility and organization) of this paper?

Adequate

5. Literature: Does the paper give complete literature review?

Adequate

6. Overall Rating: Do you recommend acceptance or rejection?

Weak Accept (+1)

III. Comment About the Paper

This paper evaluated Unet and DeepLabV3+ model for multispectral semantic segmentation.
This paper obtain a good result and successfully develop matlab based GUI to process multispectral images.

The implications of the proposed application in GIS are well-explained.

However, some aspects should be revised:
In abstract: “to achieve land cover segmentation in less than ten minutes.” This claim is hardware bound specifically. What the meaning of 10 minutes, is depends on the hardware and the number of data.

Why do you use two scenario classes? what classes are divided? How about data distribution for each class? Is it balanced both in 3 class and 5 class? how do you split the dataset for the Train, validation, and test set?

This paper compares result of DeepLabv3+ and UNet. But does not provide an explanation or intuition to explain the result.
Why DeepLabv3+ has a faster speed compared to UNet? even though the number of layers and model complexity of DeepLabv3 is more than Unet. So does Unet have an advantage?

In the input, there are bands 2,3,4,5,6,7. What's the difference between each band? Which band did you use for training and testing?
On page 4, "By inputting the cropped satellite images from band 2 to band 6 within the study area". Why only band 2 to band 6?

In Table 1 and Table 2. What is processing speed? Better to write either training time or testing time to make it clear.
To evaluate semantic segmentation, why do not use IoU and dice coefficient?

Reviewer C:
Recommendation: Revisions Required

I. Reviewer's Confidence

High

II. Quality of The Article

1. Originality: How would you rate the originality of the paper?

Adequate

2. Significance of Topic: Is this topic gives significant contribution?

Inadequate

3. Technical Quality: How would you rate the technical quality of this paper?

Inadequate

4. Presentation: How would you rate the presentation (readibility and organization) of this paper?

Adequate

5. Literature: Does the paper give complete literature review?

Inadequate

6. Overall Rating: Do you recommend acceptance or rejection?

Borderline Paper (0)

III. Comment About the Paper

This study discusses a SEMANTIC SEGMENTATION OF LAND COVER FROM MULTISPECTRAL IMAGES. This study discusses an interesting and applied topic. However, there are several issues that need to be addressed in this paper as follows:
1. In terms of methodology, the contribution of this paper is low as the authors neither proposed a new method nor modified an existing method. Please clarify and higlight your contributions.
2. The authors didn't investigate the structures (layers, kernels, etc) and hyperparameters of the method to achieve better accuracy. The authors at least do that to increase the knowledge of the paper.
3. The authors need to break down the analysis into per-class accuracy along with general performance as shown in Tables 1 and 2. Therefore, we can observe which class is already better, which class needs to be improved, etc.
4. What do you mean by "stable" and "fluctuating" training characteristics? do they mean the loss during training? can you observe the models with more epochs?
5. Figures 2 and 3 need to be revised with better images e.g. the arrow from input to kernel and from kernel to output should be clear.
6. The writing and literature review of this paper need to be improved with the newest research in deep learning and semantic segmentation area.

Jurnal Ilmu Komputer dan Informasi (JIKI)

Reviewer Response Form

Instruction:

Each response from the author will be checked by the corresponding reviewers. If it doesn't meet expectations, there will be a **high possibility of being rejected**. Please provide specific explanation of the revision that has been made along with the location of the revision (page, section, paragraph). There **must be a response for every reviewer's comments**. If you cannot address the reviewer's comment/request, please provide a clear and specific argument why the comment/request cannot be addressed.

Please merge this Reviewer Response Form at the beginning of the revised manuscript (before Title).

Do not put your name and affiliation on this form.

Paper ID :
Title :

Reviewer A

No	Reviewer Comment	Author Responses	Page, Section, Paragraph
1	*A basic point that's lost is the contributon. Please highlight the contribution of this research, since it seems the method used is just replicated from the previous work.*	*There is an additional explanation about the novelty of the research. In the Introduction we already explained the motivation of the development of the system and also its new approach in methodology. We also address the comparasion between several differences algorithm implementation to know which is the most effiecient to implement the system.*	*Page 1, Section Introduction, Paragraph 2**
2	*Please give detail and clear explanation about each step you depicted in Figure 1: what is "onset direction", "onset segmentation", and "onset classification"?*	*We already added additional explanation about "onset direction", "onset segmentation", and "onset classification"*	Page 3, Section Result, Paragraph 3*
3			

**this is just an example*

Reviewer B

No	Reviewer Comment	Author Responses	Manuscript Revisions
1	*Still not clear why you choose "Electrocorticographic" signals for this analysis? Is it the*	*We already added some explanation of the motives why we use "Electrocorticographic" signals, such as the clarity, and sufficient*	*Page 2, Section Methodology, Paragraph 3**

	novelty or just replicating another works? Please give some motives why you choose this signals.	*amount of signals we could gain. As a comparison, we also provide another empirical signal that can be used to the same object analysis.*	
2			
3			

**This is just an example.*

Universitas
Bhayangkara
Jakarta Raya

Herlawati Herlawati <herlawati@ubharajaya.ac.id>

[JIKI] Editor Decision

2 pesan

Journal Administrator <jiki@cs.ui.ac.id> 18 Agustus 2023 pukul 16.05
Kepada: Herlawati Herlawati <herlawati@ubharajaya.ac.id>, Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Herlawati Herlawati, Rahmadya Trias Handayanto:

We have reached a decision regarding your submission to Jurnal Ilmu Komputer dan Informasi, "SEMANTIC SEGMENTATION OF LAND COVER FROM MULTISPECTRAL IMAGES".

Our decision: Still major revisions

We can accept your paper if all the reviewers' concerns are adequately addressed. In this second revision, you must carefully address all reviewers' concerns, especially for **Major Points of Reviewer A**. If your second revision still doesn't meet expectations, there will be a **high possibility of being rejected**. Please submit your revision through the system and email (in case you have trouble when submitting the revision through the system) before **31 August 2023**.

To fasten the second round of the review process regarding your revision later, please attached the reviewer response form to explain how you address the reviewer comments/requests and merge them in the same file with your paper revision (like you did in your first revision). Due to your paper will be reviewed again in the third round, please remind that your paper must still be blind (no author name and affiliation in the revised paper). If you have any problems or questions about the submission revision, please do not hesitate to contact us.

Journal Administrator
Faculty of Computer Science Universitas Indonesia
jiki@cs.ui.ac.id

Reviewer A:
Recommendation: Revisions Required

I. Reviewer's Confidence

Medium

II. Quality of The Article

1. Originality: How would you rate the originality of the paper?

Adequate

2. Significance of Topic: Is this topic gives significant contribution?

Adequate

3. Technical Quality: How would you rate the technical quality of this paper?

Adequate

4. Presentation: How would you rate the presentation (readibility and organization) of this paper?

Inadequate

5. Literature: Does the paper give complete literature review?

Adequate

6. Overall Rating: Do you recommend acceptance or rejection?

Weak Reject (-1)

III. Comment About the Paper

Major points
* In light of the testing and training performance results, it is notable that the accuracy exhibits only a marginal variance of approximately 1% and 2.5% between DeepLabV3 and UNet respectively. It is crucial to assess whether this difference holds any substantial implications for improvement from proposed model. So, it is recommended to do paired t-test.
* The utilization of baselines in this research seems to lack clarity. As emphasized in Point 3 of Reviewer A's table, the authors noted that utilizing pretrained models for semantic segmentation led to low accuracy, citing Wieland et al. It could be advantageous to regard this pretrained model as a baseline for both UNet and DeepLabV3 in your comparison. By doing so, you could contrast it with your proposed approach of not incorporating any pretrained models. This comparison might yield valuable insights into the performance of your proposed model and provide a more comprehensive analysis of the results.

Minor points
* I believe using brackets in Table 2 to show the differences in performance among the proposed models might not be the best choice, as it could confuse readers. Instead, I suggest using a long table or a bar graph to display the information. This will make it easier for readers to compare the models' performance accurately and avoid any misunderstandings.
* The authors should make comprehensive paragraph to support their proposed models as well as the readability.
* The current state of the paper lacks a comprehensive and detailed explanation as well as the reasoning of the metrics evaluation that were used.
* It seems that there might be a misunderstanding regarding the presentation of all metric evaluation results for the training, testing, and validation sets. To clarify, my suggestion is to create a comprehensive table that outlines the performance metrics for each of these sets. This table should focus on performance metrics, unlike the performance scenario illustrated in Figure 4.

Reviewer B:
Recommendation: Accept Submission

I. Reviewer's Confidence

High

II. Quality of The Article

1. Originality: How would you rate the originality of the paper?

Adequate

2. Significance of Topic: Is this topic gives significant contribution?

Adequate

3. Technical Quality: How would you rate the technical quality of this paper?

Adequate

4. Presentation: How would you rate the presentation (readibility and organization) of this paper?

Good

5. Literature: Does the paper give complete literature review?

Adequate

6. Overall Rating: Do you recommend acceptance or rejection?

Accept (+2)

III. Comment About the Paper

All the revision points have been addressed in the revision version.
I suggest the authors add this contribution highlight (as written in the response) into introduction section (before last paragraph):
"We aim to bridge this gap by utilizing commonly used satellite images in RS-GIS, particularly utilizing the band frequency sensor. The results of this research serve as a benchmark for future research focusing on modified existing methods using satellite images, which have the advantage of capturing wide areas."

Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 30 Agustus 2023 pukul 11.58

Kepada: "Rahmadya Trias Handayanto, ST" <rahmadya.trias@gmail.com>

[Kutipan teks disembunyikan]

Universitas
Bhayangkara
Jakarta Raya

Herlawati Herlawati <herlawati@ubharajaya.ac.id>

[JIKI] New notification from Jurnal Ilmu Komputer dan Informasi

1 pesan

Journal Administrator <jiki@cs.ui.ac.id> 7 September 2023 pukul 00.13
Balas Ke: Adila Alfa Krisnadhi <jiki@cs.ui.ac.id>
Kepada: Herlawati Herlawati <herlawati@ubharajaya.ac.id>

You have a new notification from Jurnal Ilmu Komputer dan Informasi:

There is new activity in the discussion titled "Revision Round 3" regarding the submission "SEMANTIC SEGMENTATION OF LAND COVER FROM MULTISPECTRAL IMAGES".

Link: https://jiki.cs.ui.ac.id/index.php/jiki/authorDashboard/submission/1206

Adila Alfa Krisnadhi

[JIKI] Editor Decision

3 pesan

Journal Administrator <jiki@cs.ui.ac.id> 20 September 2023 pukul 18.54
Kepada: Herlawati Herlawati <herlawati@ubharajaya.ac.id>, Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Herlawati Herlawati, Rahmadya Trias Handayanto:

We have reached a decision regarding your submission to Jurnal Ilmu Komputer dan Informasi, "SEMANTIC SEGMENTATION OF LAND COVER FROM MULTISPECTRAL IMAGES".

Our decision: Accept with Revisions

We can fully accept your submission if all the reviewers' concerns are adequately addressed. Please submit your second revision through the system and email (in case you have trouble submitting the second revision through the system) including the Docx or LaTeX version before **27 September 2023**. For this revision, please write the authors' names including the affiliations. If you have any problems or questions about the submission revision, please do not hesitate to contact us.

Journal Administrator
Faculty of Computer Science Universitas Indonesia
jiki@cs.ui.ac.id

Reviewer A:
Recommendation: Revisions Required

I. Reviewer's Confidence

Medium

II. Quality of The Article

1. Originality: How would you rate the originality of the paper?

Good

2. Significance of Topic: Is this topic gives significant contribution?

Good

3. Technical Quality: How would you rate the technical quality of this paper?

Good

4. Presentation: How would you rate the presentation (readibility and organization) of this paper?

Good

5. Literature: Does the paper give complete literature review?

Excellent

6. Overall Rating: Do you recommend acceptance or rejection?

Accept (+2)

III. Comment About the Paper

Overall, this paper has answered all points of the reviewer's comments with clear and reasonable explanations. However, there is a thing that need to be revised: the writing is expected to be more consistent (examples have been marked and attached), please check again before submitting the revised paper.

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2 lampiran

B-1206 Round 3.pdf
2066K

A-1206-Article Text-3310-1-4-20230906_MinorRevisionPoint.pdf
2118K

Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 25 September 2023 pukul 20.28
Kepada: Journal Administrator <jiki@cs.ui.ac.id>
Cc: Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Editor,

I have attached the revised file below.
If you don't mind, I have also included a file with revisions to the title.
Thank you for your attention.

Best Regard,

Herlawati
[Kutipan teks disembunyikan]

2 lampiran

1206-Article Text-3300-1-18-20230831-JIKI-UI-Herlawati-Rahmadya-Revision Title.docx
3142K

1206-Article Text-3300-1-18-20230831-JIKI-UI-Herlawati-Rahmadya.docx
3142K

Mail Delivery System <MAILER-DAEMON@mailgw.cs.ui.ac.id> 25 September 2023 pukul 20.30
Kepada: herlawati@ubharajaya.ac.id

This is the mail system at host mailgw.cs.ui.ac.id.

I'm sorry to have to inform you that your message could not
be delivered to one or more recipients. It's attached below.

For further assistance, please send mail to postmaster.

If you do so, please include this problem report. You can
delete your own text from the attached returned message.

The mail system

<faizahchan@gmail.com>: host gmail-smtp-in.l.google.com[74.125.68.26] said:
550-5.7.26 This mail is unauthenticated, which poses a security risk to the
550-5.7.26 sender and Gmail users, and has been blocked. The sender must
550-5.7.26 authenticate with at least one of SPF or DKIM. For this message,
550-5.7.26 DKIM checks did not pass and SPF check for [ubharajaya.ac.id]
did 550-5.7.26 not pass with ip: [152.118.29.7]. The sender should visit
550-5.7.26 https://support.google.com/mail/answer/81126#authentication for
550 5.7.26 instructions on setting up authentication.
cn4-20020a056a020a8400b00578acf1e8a0si9882393pgb.471 - gsmtp (in reply to
end of DATA command)

<lestari81ok@gmail.com>: host gmail-smtp-in.l.google.com[74.125.68.26] said:
550-5.7.26 This mail is unauthenticated, which poses a security risk to the
550-5.7.26 sender and Gmail users, and has been blocked. The sender must
550-5.7.26 authenticate with at least one of SPF or DKIM. For this message,
550-5.7.26 DKIM checks did not pass and SPF check for [ubharajaya.ac.id]
did 550-5.7.26 not pass with ip: [152.118.29.7]. The sender should visit
550-5.7.26 https://support.google.com/mail/answer/81126#authentication for
550 5.7.26 instructions on setting up authentication.
cn4-20020a056a020a8400b00578acf1e8a0si9882393pgb.471 - gsmtp (in reply to
end of DATA command)

Final-Recipient: rfc822; faizahchan@gmail.com
Original-Recipient: rfc822;jiki@cs.ui.ac.id
Action: failed
Status: 5.7.26
Remote-MTA: dns; gmail-smtp-in.l.google.com
Diagnostic-Code: smtp; 550-5.7.26 This mail is unauthenticated, which poses a
security risk to the 550-5.7.26 sender and Gmail users, and has been
blocked. The sender must 550-5.7.26 authenticate with at least one of SPF

or DKIM. For this message, 550-5.7.26 DKIM checks did not pass and SPF check for [ubharajaya.ac.id] did 550-5.7.26 not pass with ip: [152.118.29.7]. The sender should visit 550-5.7.26 https://support.google.com/mail/answer/81126#authentication for 550 5.7.26 instructions on setting up authentication. cn4-20020a056a020a8400b00578acf1e8a0si9882393pgb.471 - gsmtp

Final-Recipient: rfc822; lestari81ok@gmail.com
Original-Recipient: rfc822;jiki@cs.ui.ac.id
Action: failed
Status: 5.7.26
Remote-MTA: dns; gmail-smtp-in.l.google.com
Diagnostic-Code: smtp; 550-5.7.26 This mail is unauthenticated, which poses a security risk to the 550-5.7.26 sender and Gmail users, and has been blocked. The sender must 550-5.7.26 authenticate with at least one of SPF or DKIM. For this message, 550-5.7.26 DKIM checks did not pass and SPF check for [ubharajaya.ac.id] did 550-5.7.26 not pass with ip: [152.118.29.7]. The sender should visit 550-5.7.26 https://support.google.com/mail/answer/81126#authentication for 550 5.7.26 instructions on setting up authentication. cn4-20020a056a020a8400b00578acf1e8a0si9882393pgb.471 - gsmtp

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noname
5K

Jurnal Ilmu Komputer dan Informasi (JIKI)

Reviewer Response Form

Instruction:

Each response from the author will be checked by the corresponding reviewers. If it doesn't meet expectations, there will be a **high possibility of being rejected**. Please provide specific explanation of the revision that has been made along with the location of the revision (page, section, paragraph). There **must be a response for every reviewer's comments**. If you cannot address the reviewer's comment/request, please provide a clear and specific argument why the comment/request cannot be addressed.

Please merge this Reviewer Response Form at the beginning of the revised manuscript (before Title).

Do not put your name and affiliation on this form.

Paper ID :
Title : Semantic Segmentation of Land Cover from Multispectral Images

Reviewer A

No	Reviewer Comment	Author Responses	Page, Section, Paragraph
1	*In light of the testing and training performance results, it is notable that the accuracy exhibits only a marginal variance of approximately 1% and 2.5% between DeepLabV3 and UNet respectively. It is crucial to assess whether this difference holds any substantial implications for improvement from proposed model. So, it is recommended to do paired t-test.*	*Thanks for the comments. Since we do not compare two same models with additional/specific treatment, we decide not to use paired t-test, instead we just see the improvement. We also use the speed comparison (in the same machine/processor) both models. As explanation in conclusions "Additionally, it eliminates the need for specialized skills in classifying land cover types".*	*Page 7, Section Conclusions*
2	*The utilization of baselines in this research seems to lack clarity. As emphasized in Point 3 of Reviewer A's table, the authors noted that utilizing pretrained models for semantic segmentation led to low accuracy, citing Wieland et al. It could be advantageous to regard this pretrained model as a*	*Thank you for the comment. The availability of pre-trained satellite images is still difficult to find. The RIT-18 is high resolution on small area with 18 classes that did not meet the requirement of land use/cover practitioners, e.g., picnic table, buoy, road marking, etc. Therefore, we train with satellite images from the scratch as well as Wieland et al.*	*Page 3, Section Materials and Methods*

	baseline for both UNet and DeepLabV3 in your comparison. By doing so, you could contrast it with your proposed approach of not incorporating any pretrained models. This comparison might yield valuable insights into the performance of your proposed model and provide a more comprehensive analysis of the results.		
3	*I believe using brackets in Table 2 to show the differences in performance among the proposed models might not be the best choice, as it could confuse readers. Instead, I suggest using a long table or a bar graph to display the information. This will make it easier for readers to compare the models' performance accurately and avoid any misunderstandings.*	*Thank you for the suggestion. We add the chart.*	
4	*The authors should make comprehensive paragraph to support their proposed models as well as the readability.*	*Thanks. We have added the explanation in the beginning of Materials and Methods section.*	*Page 2, Section Materials and Methods*
5	*The current state of the paper lacks a comprehensive and detailed explanation as well as the reasoning of the metrics evaluation that were used.*	*Thank you for the comment. We have added the three equations (equation 6 – 9) to explain the metric*	*Page 5. Section Result and Discussion*
6	*It seems that there might be a misunderstanding regarding the presentation of all metric evaluation results for the training, testing, and validation sets. To clarify, my suggestion is to create a comprehensive table that outlines the performance metrics for each of these sets. This table should focus on performance metrics, unlike the*	*Thank you for the correction. We have removed the upper part of Fig 4 to avoid misunderstanding since it explains the result of checking the model whether can be trained, not for metric evaluation.*	*Page 4. Materials and Methods section.*

	performance scenario illustrated in Figure 4.		

Reviewer B

No	Reviewer Comment	Author Responses	Manuscript Revisions
1	*All the revision points have been addressed in the revision version.* *I suggest the authors add this contribution highlight (as written in the response) into introduction section (before last paragraph):* *"We aim to bridge this gap by utilizing commonly used satellite images in RS-GIS, particularly utilizing the band frequency sensor. The results of this research serve as a benchmark for future research focusing on modified existing methods using satellite images, which have the advantage of capturing wide areas."*	*Thank you very much. We have added before the last paragraph of intro as your suggestion: "We aim to bridge this gap by utilizing commonly used satellite images in RS-GIS, particularly utilizing the band frequency sensor. The results of this research serve as a benchmark for future research focusing on modified existing methods using satellite images, which have the advantage of capturing wide areas.*	*Page 7 Section Conclusions*

Jurnal Ilmu Komputer dan Informasi (Journal of Computer Science and Information)
15/1 (2022), xx-xx. DOI: http://dx.doi.org/10.21609/jiki.v15i1.xxx

SEMANTIC SEGMENTATION OF LAND COVER FROM MULTISPECTRAL IMAGES

First Author, Second Author, and Third Author (*left it blank for first submission*)

[1]Department, Faculty, University, Address, City, Zip Code, Country
[2]Research Group, Institution, Address, City, Zip Code, Country
(*left it blank for first submission*)

E-mail: author@address.com (*left it blank for first submission*)

Abstract

The application of Deep Learning has now extended to various fields, including land cover classification. Land cover classification is highly beneficial for urban planning. However, the current methods heavily rely on statistical-based applications, and generating land cover classifications requires advanced skills due to their manual nature. It takes several hours to produce a classification for a province-level area. Therefore, this research proposes the application of semantic segmentation using Deep Learning techniques, specifically U-Net and DeepLabV3+, to achieve fast land cover segmentation. This research utilizes two scenarios, namely scenario 1 with three land classes, including urban, vegetation, and water, and scenario 2 with five land classes, including agriculture, wetland, urban, forest, and water. Experimental results demonstrate that DeepLabV3+ outperforms U-Net in terms of both speed and accuracy. As a test case, Landsat satellite images were used for the Karawang and Bekasi Regency areas.

Keywords: *deeplabv3+, landsat satellite, semantic segmentation, u-net, multispectral.*

1. Introduction

Computer Vision is a branch of computer science that finds applications in various fields such as medicine, transportation, remote sensing, and more. One of the benefits it provides is the speed of processing and high accuracy achieved in recent times. However, one area that still lacks widespread adoption of Deep Learning is Remote Sensing, particularly in Land Cover classification. This is despite certain tasks requiring a significant amount of data, such as land use change prediction, where Land Cover classifications for specific periods are crucial. If generating a single classification map already consumes considerable time, the challenge becomes greater when multiple data sets are required for different periods (typically annual data). Computer Vision encompasses various tasks such as classification, object detection, segmentation, image restoration, and more. Land Cover classification falls under the segmentation category, where each pixel represents a specific land cover type [1]–[4].

Satellite imagery is easily accessible nowadays, for example, through the official USGS website, which provides Landsat satellite data. Users can select specific dates within a given year and choose multispectral images, where multiple bands are available for specific sensors, such as red, green, blue, infrared, and more. With a larger number of bands, it is expected to achieve better accuracy in land cover classification, including categories such as buildings, vegetation, water bodies, wetlands, and other land cover types.

Previous researchers have applied U-Net for land use/cover classification using six Landsat bands, namely bands 2 to 7. The accuracy achieved was quite good in classifying several land use/cover categories. However, the proposed method requires the use of drones or Unmanned Aerial Vehicles (UAVs), which can be costly [5].

U-Net, which is based on Convolutional Neural Networks (CNNs), has certain limitations, such as the vanishing/exploding gradient problem [6], [7]. As a result, some researchers have replaced it with ResNet for the encoder and decoder sides. Additionally, by incorporating the Atrous Spatial Pyramid Pooling (ASPP), a DeepLabV3+ model is believed to be able to handle large-scale image

classification tasks [8]. This is significant considering that U-Net is primarily applied to small-scale medical images [9], [10]. Both U-Net [11]–[14] and DeepLabV3+ [15]–[18] have undergone numerous modifications to improve performance and adapt to hardware conditions with limited computational resources [19].

Since research utilizing satellite imagery is still relatively scarce [20], and the majority of studies have yet to incorporate multispectral imagery [21], [22], This study modifies the conventional semantic segmentation model, which typically utilizes drone-captured images, to be based on multispectral satellite images. The performance of two well-known methods, i.e., U-Net and DeepLabV3+, will be analyzed considering that both models have specific applications. U-Net is typically used for small-sized medical images, while DeepLabV3+ is commonly employed for large-scale images.

We aim to bridge this gap by utilizing commonly used satellite images in RS-GIS, particularly utilizing the band frequency sensor. The results of this research serve as a benchmark for future research focusing on modified existing methods using satellite images, which have the advantage of capturing wide areas. The rest of the paper is organized as follows. After explaining the data sources and deep learning models used, two prototypes were created to facilitate testing, and their performance was evaluated.

2. Materials and Methods

This study used two Deep Learning models as benchmarks to make it easier for RS-GIS practitioners to classify land cover. Tests were carried out in two locations, namely the western region of Karawang and Bekasi district to find out whether it was feasible or not to be implemented in other areas. Data obtained from Landsat satellite imagery provided by USGS was used (https://earthexplorer.usgs.gov/), captured on May 11, 2021. The captured area covered a single tile encompassing the JABOTABEK region. As a preliminary processing step, the data needed to be cropped to match the research area, which includes the Karawang and Bekasi Regency regions.

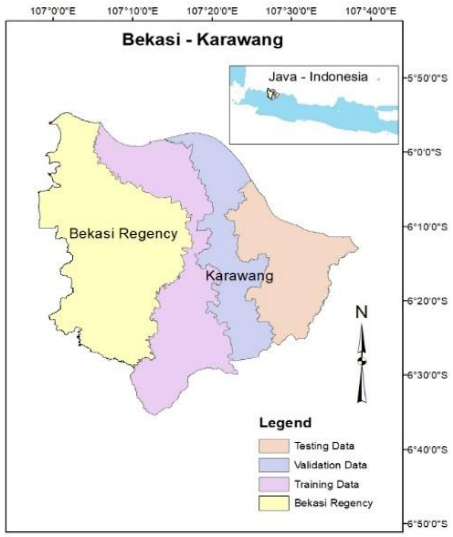

Fig. 1. Training and Testing Areas.

The Karawang region was selected as the training data for the U-Net and DeepLabV3+ models, while the Bekasi Regency was used as the testing location. The Karawang and Bekasi regions are located on the island of Java, Indonesia, with latitude and longitude coordinates are approximately $6^0$10' and $107^0$20', respectively. Figure 1 illustrates the training, validation, and testing data areas within the research area. The selected segment classes follow the standard land use/cover classification rules, where Landsat falls into category I [23]. Figure 2 shows the preprocessing process for preparing the training data, validation data, and test data for the Karawang region, which has an area of 1911 km^2. The same process is performed for the Bekasi district, which has an area of 1274 km^2 as the testing area. The final process shows the pixel dimensions for Karawang and Bekasi, which are 5,877,336 pixels and 2,577,920 pixels, respectively. To generate a model for the Karawang region, this area is divided into three regions, each for training, validation, and testing data. The sizes of the training, validation, and testing data are 1,439,328 pixels, 1,679,208 pixels, and 2,758,800 pixels, respectively.

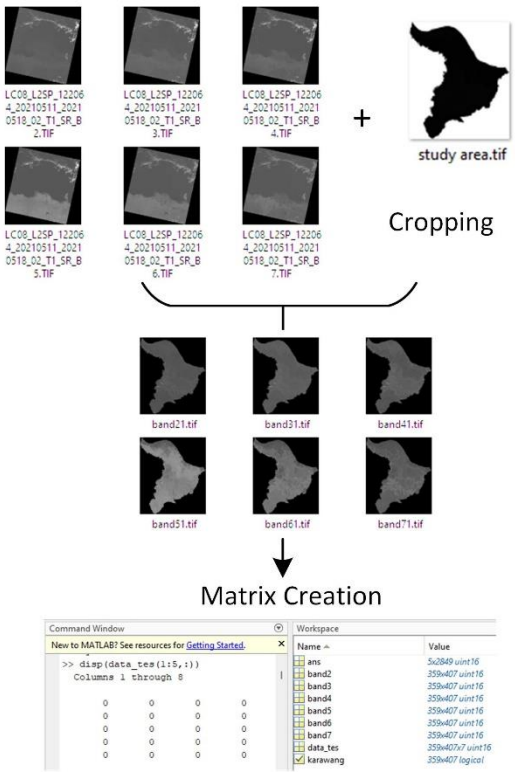

Fig. 2. Preprocessing Satellite Imageries to Dataset

Two scenarios were chosen: scenario one with three classes (urban, vegetation, and water) and scenario two with five classes, including agriculture, wetland, urban, forest, and water. The first scenario with three classes is basic, where most land covers in other tropical areas have those classes. The second scenario divide vegetation into agriculture and forest, as well as the water into water and wetland since the study area uses wetland and water as its land use zones. The ground truth datasets, consisting of classified segments, are used for accuracy calculations. The ground truth is created using TerrSet through the Iterative Self-Organizing Clustering (ISOCLUST) method, which is then followed by manual reclassification to ensure that the clustering results can differentiate segments according to the scenario.

The MATLAB 2021a version was chosen for the training and evaluation process. MATLAB live script for training refers to the official MATLAB website, i.e., for U-Net as a baseline method which used non-satellite imagery, i.e., RIT-18 dataset with 18 classes [24]. The RIT-18 is high resolution on small area with 18 classes that did not meet the requirement of land use/cover practitioners, e.g., picnic table, buoy, road marking, etc. Therefore, we train with satellite images from scratch. For the DeepLabV3+ model, we utilized the available model library in MATLAB's Network Designer. To convert image files into MAT files in the form of matrices, a conversion process is required.

Figure 3 illustrates the U-Net model. The small circles in the model represent one convolutional layer/block. The structure of the encoder and decoder forms a shape resembling the letter 'U,' which is why it is named U-Net. The U-Net has fewer layers compared to DeepLabV3+ due to the issues of vanishing and exploding gradients.

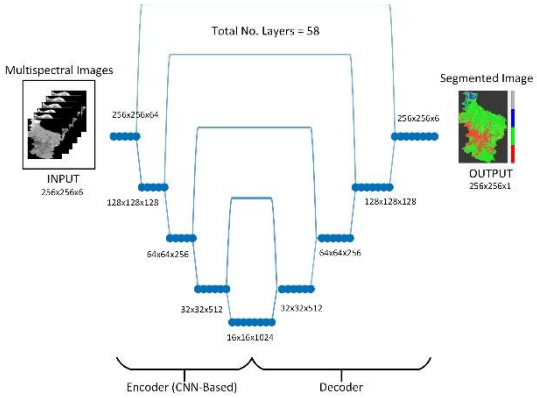

Fig. 3. U-Net Architecture

U-Net utilizes a series of 2D convolution processes with pooling and bias with the following formula:

$$\omega * F(x,y) = \left(\sum_{\delta x=-k_i}^{k_i} \sum_{\delta y=-k_j}^{k_j} \omega(\delta x, \delta y) \cdot F(x+\delta x, y=\delta y)\right) + \omega_{bias} \quad (1)$$

$where\ \omega_{bias} \in \mathbb{R}\ is\ bias\ of\ the\ kernel\ \omega$

The cross-entropy loss function in equation 2 is used to measure how closely the predictions of the U-Net model approximate the true values.

$$L_{CE} = -\sum_{i=1}^{n} t_i \log(p_i), for\ n\ classes \quad (2)$$

Where t+ is the true label and p_i is the SoftMax probability for class-i. The activation functions used include ReLU, Sigmoid, and SoftMax, following equations 3-5.

$$R(z) = \begin{cases} -x, & x < 0 \\ x, & x \geq 0 \end{cases} \quad (3)$$

$$(z) = \frac{1}{1+e^{-z}} \quad (4)$$

$$SoftMax(z_j) = \frac{e^{z}j}{\sum_{k=1}^{K} e^{z}k}\ for\ j = 1, \ldots, K \quad (5)$$

Both U-Net and DeepLabV3+ (Figure 4) utilize encoder and decoder structures. While U-Net's encoder and decoder use CNN blocks, DeepLabV3+'s encoder and decoder employ ResNet50 blocks. Additionally, in the bottleneck section of DeepLabV3+, Atrous Spatial Pyramid Pooling (ASPP) is performed to extract features from objects of various sizes. The copy and crop operation in DeepLabV3+ is only applied to specific expansions/contractions, unlike U-Net,

which is performed at each expansion/contraction.

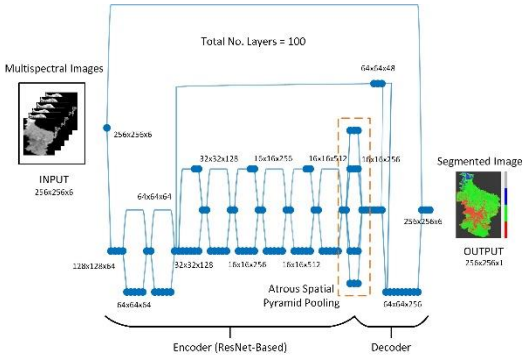

Fig. 4. DeepLabV3+ Architecture

Table 1 shows the parameters and hyperparameters of U-Net and DeepLabV3+. Here, hyperparameters are set the same to produce a fair comparison. It appears that U-Net has a larger number of parameters and model size compared to DeepLabV3+ despite DeepLabV3+ having nearly twice the number of layers as U-Net.

Table 1. Parameters and Hyperparameters of U-Net and DeepLabV3+

	Network Info	U-Net	DeepLabV3+
Parameters	# of layer	58 layers	100 layers
	Size	110.22 Mbyte	58.39 Mbyte
	# of params	31.03 M	20.62 M
Hyperparameters	Max Epoch	2 (2000 iteration)	
	Initial learning rate	0.05	
	Minibatch size	16	
	L2-regularization	0.0001	
	Training option	stochastic gradient descent with momentum (SGDM)	
	gradient threshold	0.05	

Accuracy is calculated based on the confusion matrix, which compares the predictions of U-Net and DeepLabV3+ with the actual values (Ground Truth). Additionally, the processing speed in making predictions is also recorded to assess the performance of the land cover segmentation. To ensure a fair comparison, the number of epochs is kept the same for both U-Net and DeepLabV3+ during training, which is 2 epochs with 2000 iterations.

3. Result and Discussion

The Graphic User Interface (GUI) using the MATLAB 2021a programming language is created to facilitate the testing process. It consists of U-Net and DeepLabV3+ for segmenting scenario 1 with three-segment land cover classes and scenario 2 with five-segment land cover classes. With compilation, the created GUI can be executed on other computers without having MATLAB installed.

The training process takes several hours for each model. Figure 5 illustrates the training performance, with U-Net exhibiting high fluctuations. The training was executed using the NVIDIA GeForce MX130 Graphic Processing Unit (GPU). To achieve higher accuracy levels, hardware with longer training time (tens or even hundreds of epochs) is required. However, for comparing the feasibility of the two methods in the segmentation process, the used hardware is still suitable. In addition, from the training process graph, it is noticeable that the accuracy improvement starts to slow down as early as the second epoch.

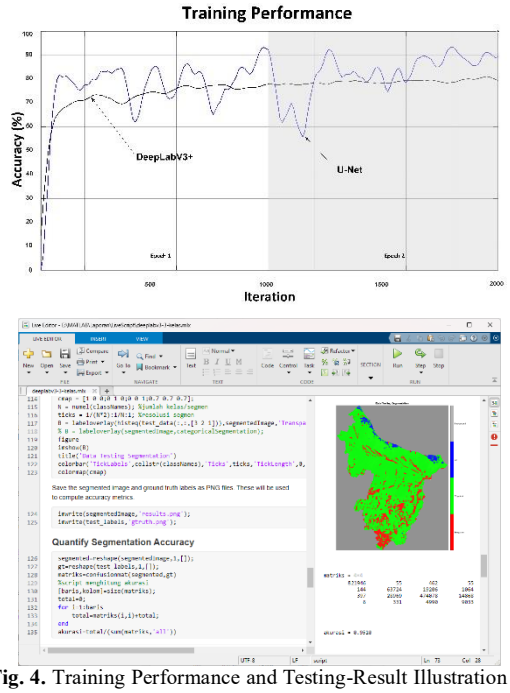

Fig. 4. Training Performance and Testing-Result Illustration in MATLAB live script

The trained model, in the form of MAT files, is then used for land cover segmentation prediction in another area that was not involved in the training process. The three classes scenario is basic, where vegetation, urban, and water prediction shows 94% accuracy for U-Net and 95% accuracy for DeepLabV3+. Table 2 and Figure 5 show the metrics of model performance based on equation 6 - 9. Water appears to be the class with the lowest accuracy, while agriculture has the highest accuracy.

$$precision = \frac{TP}{TP+FP} \quad (6)$$

$$recall = \frac{TP}{TP+FN} \quad (7)$$

$$f1 - score = 2 \times \frac{precision \times recall}{precision+recall} \quad (8)$$

$$IoU = \frac{object \cap detected\ box}{object \cup detected\ box} \quad (9)$$

Table 2. Testing Result of DeepLabV3+ and U-Net (in brackets)

Class	Precision	Recall	F1-Score	IoU
Agri	88.26 (83.83)	84.08 (84.21)	86.12 (84.02)	75.63 (72.44)
Wetland	69.96 (88.29)	74.70 (62.50)	72.25 (73.19)	56.56 (57.71)
Urban	88.41 (76.21)	54.72 (57.24)	67.60 (65.38)	51.06 (48.56)
Forest	54.45 (56.78)	74.14 (70.07)	62.79 (62.73)	45.76 (45.70)
Water	53.87 (19.77)	59.35 (85.70)	56.48 (32.13)	39.35 (19.14)
Accuracy	88.313 (87.654)			
mIoU	53.67 (48.71)			

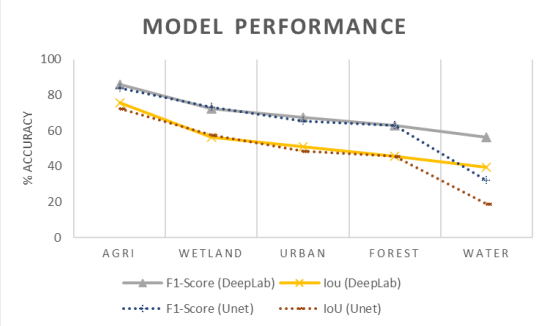

Fig. 5. Accuracy Comparison of DeepLabV3+and UNet

The testing was conducted using test data from Karawang Regency (the right part of Karawang as shown in Fig1), both for U-Net and DeepLabV3+. DeepLabV3+ showed superiority in terms of accuracy and speed. Figure 6 shows the accuracy of U-Net and DeepLabV3+ to be 87.65% and 88.31%, respectively. The speed of DeepLabV3+ was less than 1 minute, while U-Net took around 6 minutes.

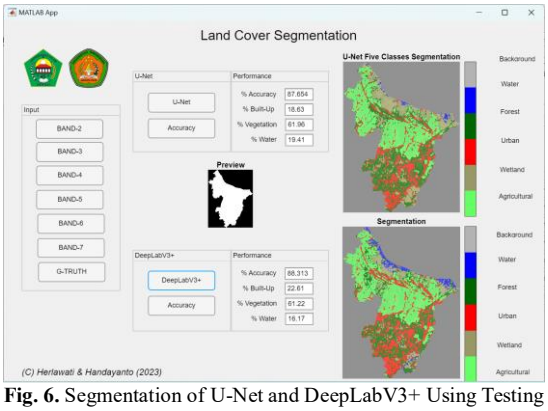

Fig. 6. Segmentation of U-Net and DeepLabV3+ Using Testing Dataset

Another area, i.e., Bekasi Regency, was used for testing as shown in Figure 1. This area is adjacent to Karawang Regency. Two prototypes, one for U-Net and one for DeepLabV3+, are prepared to facilitate model testing. This testing aims to determine the suitability of the model for implementation in other regions besides Karawang.

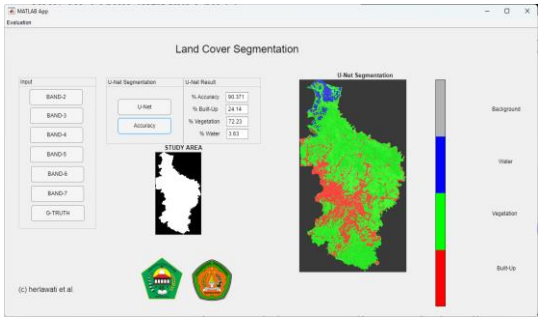

Fig. 7. U-Net Segmentation for Three Class Segments

Figure 7 shows the segmentation results using U-Net. By inputting the cropped satellite images from band 2 to band 6 within the study area, U-Net achieves a land cover segmentation accuracy of 90.37% in just 6 minutes. The percentages of Built-Up/Urban, Vegetation, and Water are 24.14%, 72.23%, and 3.63%, respectively.

Meanwhile, DeepLabV3+ (Fig. 8) achieves a slightly higher segmentation accuracy of 90.98%. However, it is important to note that it also exhibits improved speed, completing the segmentation in less than one minute.

One thing to note is the model complexity, where U-Net, with almost half the number of layers compared to DeepLabV3+, only lags by 0.61% in terms of performance.

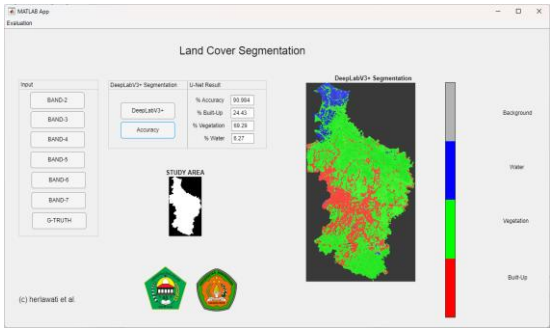

Fig. 8. DeepLabV3+ Segmentation for Three Class Segments

Overall, DeepLabV3+ slightly outperforms its predecessor, U-Net. Table 3 provides a comparison between U-Net and DeepLabV3+ in terms of accuracy, processing speed, model complexity, and training characteristics for scenario 1 for three classes. The percentages of Built-Up/Urban, Vegetation, and Water are 24.43%, 69.29%, and 6.27%, respectively. The illustration of the segmentation process can be seen in the following link: https://youtu.be/097qXm3qvWo.

Table 3. Comparison between U-Net and DeepLabV3+ for Three Classes of Segment

No.	Aspects Compared	U-Net	DeepLabV3+
1	Accuracy	90.37%	90.98%
2	Inference Time	6 minutes	1 minutes
3	Model Complexity	58 layers	100 layers
4	Training Characteristics	Fluctuating	Stable

Scenario 2 with five classes (agriculture, wetland, urban, forest, and water) shows a decrease in accuracy. This is expected to be due to the difficulty of the model in distinguishing similar classes, such as agriculture and forest, or wetland and water. Figure 9 and Table 3 show the performance of U-Net and DeepLabV3+ in the segmentation process.

Table 3. Comparison between U-Net and DeepLabV3+ for Five classes of Segment

No.	Aspects Compared	U-Net	DeepLabV3+
1	Accuracy	68.88%	71.73%
2	Inference Time	6 minutes	1 minutes
3	Model Complexity	58 layers	100 layers
4	Training Characteristics	Fluctuating	Stable

The calculation results show that scenario 1 with three-segment classes demonstrates good performance when applied to other regions. These three classes, namely urban, vegetation, and water, represent the most common land cover types in Indonesia. Some land cover types, such as wetlands, may not be present in other areas. The testing indicates that scenario 1 can be used for other regions in Indonesia.

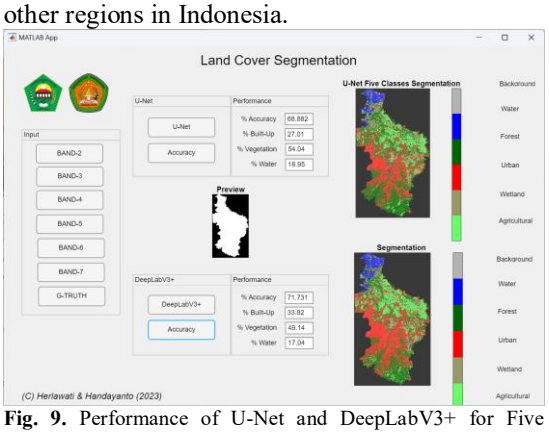

Fig. 9. Performance of U-Net and DeepLabV3+ for Five Classes Segmentation

Referring to the Cross-Industry Standard Process for Data Mining (CRISP-DM) [25], [26], another important aspect is "deployment," where users should benefit from the developed model. In addition to generating segmented images on a Graphic User Interface (GUI), a Figure window was generated as well.

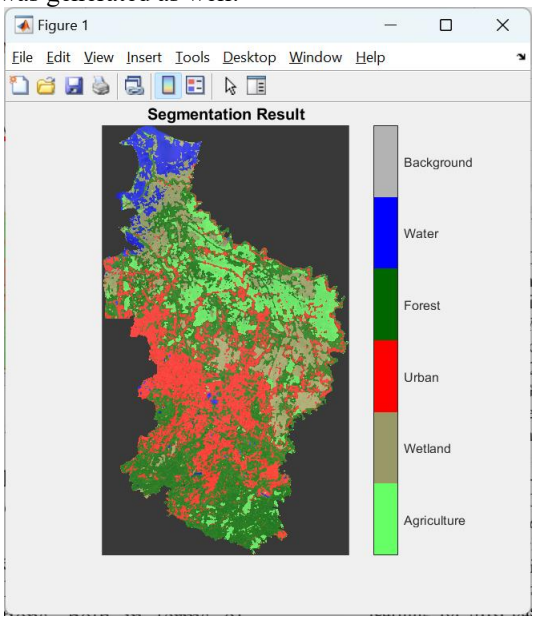

Fig. 10. Figure Window for Saving the Result

Figure 10 shows the window that can save the classification results in TIFF format. This is crucial, considering that the segmentation process is based solely on image data, and further processing is required by Remote Sensing and Geographic Information Systems (RS-GIS) practitioners through digitization and georeferencing functions.

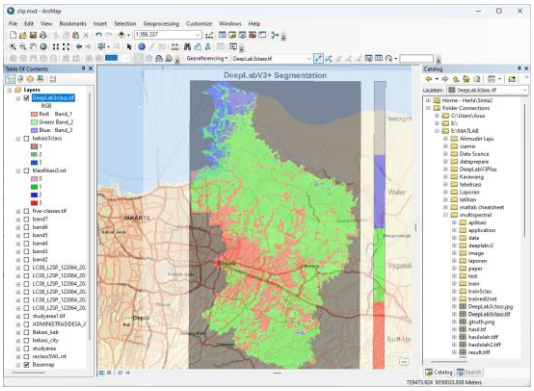

Fig. 11. The Segmentation result runs on ArcMap.

Users can then open the TIFF file to display it in GIS Tools, such as ArcMap 10.7, as shown in Figure 11 after performing georeferencing to obtain the appropriate coordinates and projection as well as adding a base map. With the base map, users can visualize the real conditions, both in terms of location (roads, cities, etc.) and satellite imagery if a satellite view base map is selected.

The prototype used is desktop-based, which is commonly employed by vertical applications

available in the market, particularly for geospatial analysis such as TerrSet, eCognition, ArcGIS, and others. Additionally, the segmentation process involves data with large-sized pixels (at the city/district level), which can be resource-intensive to run on web-based or mobile applications.

The trained models, both U-Net and DeepLabV3+, can be directly used for other regions with their respective accuracy levels for scenario 1 and scenario 2, which can be seen in Table 1 and Table 2. However, for regions outside of Indonesia, retraining is necessary due to different characteristics such as deserts, snow, and other land cover classes.

4. Conclusion

The use of deep learning in land cover segmentation accelerates the segmentation process from hours to minutes. Additionally, it eliminates the need for specialized skills in classifying land cover types from segmentation using conventional applications such as TerrSet, eCognition, ENVI, and similar tools. By inputting bands 2 to 7 of the cropped satellite imagery within the study area, the model can produce a segmented land cover map. DeepLabV3+ slightly outperforms U-Net in terms of performance (accuracy and speed), but U-Net has a simpler structure. Future research should focus on developing new models or hybrids that leverage the strengths of various deep learning models such as MobileNet, Inception, Xception, and others.

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[JIKI] Editor Decision

9 pesan

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Kepada: Herlawati <herlawati@ubharajaya.ac.id>, Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Herlawati, Rahmadya Trias Handayanto:

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Kepada: Herlawati <herlawati@ubharajaya.ac.id>, Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

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[Kutipan teks disembunyikan]

Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 4 November 2023 pukul 19.27
Kepada: Journal Administrator <jiki@cs.ui.ac.id>
Cc: Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Editor-in-Chief of Jurnal JIKI,
or Journal Administrator
Faculty of Computer Science Universitas Indonesia

jiki@cs.ui.ac.id

I want to change the title as follows:
Land Cover Segmentation of Multispectral Images Using U-Net and DeeplabV3+ Architecture

I have attached the revised file, and I hope the title can be changed.
Thank you for your attention and cooperation

Best Regards,
Herlawati
[Kutipan teks disembunyikan]

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3142K

Mail Delivery System <MAILER-DAEMON@mailgw.cs.ui.ac.id> 4 November 2023 pukul 19.29
Kepada: herlawati@ubharajaya.ac.id

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be delivered to one or more recipients. It's attached below.

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<faizahchan@gmail.com>: host gmail-smtp-in.l.google.com[64.233.170.26] said:
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instructions on setting up authentication: 550 5.7.26
https://support.google.com/mail/answer/81126#authentication
kk11-20020a170903070b00b001c75540d9fesi3399812plb.587 - gsmtp (in reply to
end of DATA command)

<lestari81ok@gmail.com>: host gmail-smtp-in.l.google.com[64.233.170.26] said:
550-5.7.26 This mail has been blocked because the sender is
unauthenticated. 550-5.7.26 Gmail requires all senders to authenticate with
either SPF or DKIM. 550-5.7.26 550-5.7.26 Authentication results:
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[152.118.29.7] = did not pass 550-5.7.26 550-5.7.26 To mitigate this
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instructions on setting up authentication: 550 5.7.26
https://support.google.com/mail/answer/81126#authentication
kk11-20020a170903070b00b001c75540d9fesi3399812plb.587 - gsmtp (in reply to

end of DATA command)

Final-Recipient: rfc822; faizahchan@gmail.com
Original-Recipient: rfc822;jiki@cs.ui.ac.id
Action: failed
Status: 5.7.26
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issue, please visit Gmail's authentication guide 550-5.7.26 for
instructions on setting up authentication: 550 5.7.26
https://support.google.com/mail/answer/81126#authentication
kk11-20020a170903070b00b001c75540d9fesi3399812plb.587 - gsmtp

Final-Recipient: rfc822; lestari81ok@gmail.com
Original-Recipient: rfc822;jiki@cs.ui.ac.id
Action: failed
Status: 5.7.26
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Diagnostic-Code: smtp; 550-5.7.26 This mail has been blocked because the sender
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550-5.7.26 DKIM = did not pass 550-5.7.26 SPF [ubharajaya.ac.id] with ip:
[152.118.29.7] = did not pass 550-5.7.26 550-5.7.26 To mitigate this
issue, please visit Gmail's authentication guide 550-5.7.26 for
instructions on setting up authentication: 550 5.7.26
https://support.google.com/mail/answer/81126#authentication
kk11-20020a170903070b00b001c75540d9fesi3399812plb.587 - gsmtp

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Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 5 November 2023 pukul 11.44
Kepada: faizahchan@gmail.com, lestari81ok@gmail.com

Dear Editor-in-Chief of Jurnal JIKI,
or Journal Administrator
Faculty of Computer Science Universitas Indonesia
jiki@cs.ui.ac.id

I want to change the title as follows:
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Thank you for your attention and cooperation

Best Regards,

Herlawati

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Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 5 November 2023 pukul 13.53
Kepada: Journal Administrator <jiki@cs.ui.ac.id>

[Kutipan teks disembunyikan]

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jiki <jiki@cs.ui.ac.id> 7 November 2023 pukul 21.50
Kepada: "Herlawati S.Si., MM., M.Kom" <herlawati@ubharajaya.ac.id>
Cc: Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Herlawati,

Is the change of title a request from one of the reviewers (no matter in what round)? If yes, we can process to change it. Please confirm.

Best regards,
JIKI Editorial Assistant
[Kutipan teks disembunyikan]

> [Kutipan teks disembunyikan]
> Kampus I (Kampus Harsono)
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> Jakarta 12550, Indonesia
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Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 10 November 2023 pukul 11.44
Kepada: jiki <jiki@cs.ui.ac.id>
Cc: Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Editor-in-Chief of Jurnal JIKI,
or Journal Administrator

Faculty of Computer Science Universitas Indonesia
jiki@cs.ui.ac.id

"I'm sorry, the title change is not at the reviewer's request but at our request, so the title can depict more details of the article content. Thank you for your attention and understanding."

Best Regards,

Herlawati
[Kutipan teks disembunyikan]

---

jiki <jiki@cs.ui.ac.id> 25 Februari 2024 pukul 03.11
Kepada: "Herlawati S.Si., MM., M.Kom" <herlawati@ubharajaya.ac.id>
Cc: Rahmadya Trias Handayanto <rahmadya.trias@gmail.com>

Dear Herlawati,

Upon consideration by the Editor in Chief, your request for a title change is approved. We have changed your title in the metadata and final manuscript. Please note that the title can no longer be changed since we will publish your paper today.

Best regards,
JIKI Editorial Assistant

[Kutipan teks disembunyikan]
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Herlawati Herlawati <herlawati@ubharajaya.ac.id>

[JIKI] New notification from Jurnal Ilmu Komputer dan Informasi

3 pesan

Journal Administrator <jiki@cs.ui.ac.id> 25 Februari 2024 pukul 04.14
Balas Ke: Adila Alfa Krisnadhi <jiki@cs.ui.ac.id>
Kepada: Herlawati Herlawati <herlawati@ubharajaya.ac.id>

You have a new notification from Jurnal Ilmu Komputer dan Informasi:

An issue has been published.

Link: https://jiki.cs.ui.ac.id/index.php/jiki/issue/current

Adila Alfa Krisnadhi

Herlawati S.Si., MM., M.Kom <herlawati@ubharajaya.ac.id> 15 Maret 2024 pukul 22.37
Kepada: Adila Alfa Krisnadhi <jiki@cs.ui.ac.id>

Dear Editor in Chief JIKI UI

Thank you for the publication of our scientific article in JIKI UI. I would like to know when our scientific article will be available on the Garuda Kemdikbud website and, also indexed in Sinta Kemdikbud. Please provide the information.

Thank you.

Best regards,
Herlawati
[Kutipan teks disembunyikan]

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jiki <jiki@cs.ui.ac.id> 16 Maret 2024 pukul 13.56
Kepada: "Herlawati S.Si., MM., M.Kom" <herlawati@ubharajaya.ac.id>

Dear Herlawati,

JIKI is ranked Sinta 2. However, how fast articles published in JIKI indexed by them (and other indexers) are fully dependent on their system.

Best regards,
JIKI Editorial Assistant
[Kutipan teks disembunyikan]

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> Jl. Harsono RM No.67 Ragunan Pasar Minggu, Jakarta Selatan, DKI
> Jakarta 12550, Indonesia

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Land Cover Segmentation of Multispectral Images Using U-Net and DeeplabV3+ Architecture

Herlawati, Rahmadya Trias Handayanto

Round 4 Status

Submission accepted.

Notifications

[JIKI] Editor Decision	2023-07-17 11:31 AM
[JIKI] Editor Decision	2023-08-18 04:05 PM
[JIKI] Editor Decision	2023-09-20 06:54 PM
[JIKI] Editor Decision	2023-11-04 04:32 AM
[JIKI] Editor Decision	2023-11-04 04:48 AM

Reviewer's Attachments

13, 2023

Revisions

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3326-1	Article Text, 1206-Article Text-3300-1-18-20230831-JIKI-UI-Herlawati-Rahmadya.docx	September 25, 2023	Article Text
3327-1	Other, 1206-Article Text-3300-1-18-20230831-JIKI-UI-Herlawati-Rahmadya-Revision Title.docx	September 25, 2023	Other

Review Discussions

Add discussion

Name	From	Last Reply	Replies	Closed
Revision Round 3	herlawati 2023-08-31 10:37 PM	editor_jiki 2023-09-07 12:11 AM	1	

Edit