

Land Use and Land Cover Classification Using Satellite Image Datasets

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Abstract—The earths climate is rapidly changing. Efficient use of natural resources such as land has become increasingly important to mitigate the adverse effects of climate change. The advancements in satellite imagery and deep learning technologies have facilitated the extraction of spatiotemporal information for highly accurate LULC classification. In this study, in addition to training, custom-built CNNs from scratch, we apply transfer learning to fine-tune pre-trained networks such as AlexNet and ResNet for LULC classification. Moreover, we applied techniques such as early stopping and data augmentation to improve the accuracy of our deep learning models. Accurate LULC classification can immensely assist efficient monitoring of land use changes in land cover planning and management.

Index Terms—land use classification, land cover classification, remote sensing, satellite imagery, EuroSAT, deep learning, transfer learning

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E. *Some Common Mistakes*

- The word “data” is plural, not singular.
- The subscript for the permeability of vacuum μ_0 , and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
- In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
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- Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
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- There is no period after the “et” in the Latin abbreviation “et al.”.
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An excellent style manual for science writers is [7].

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Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an

TABLE I
TABLE TYPE STYLES

Table Head	Table Column Head		
	Table column subhead	Subhead	Subhead
copy	More table copy ^a		

^aSample of a Table footnote.



Fig. 1. Example of a figure caption.

example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

ACKNOWLEDGMENT

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REFERENCES

Please number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first ...”

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

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