Remote Sensing Term Paper

Guidelines

Topic

Each student should independently write a term paper on an aspect of remote sensing or photo-interpretation. The first step in the paper is to turn in a title, a one-paragraph description describing the topic of interest, and a list of no less than 5 references on the specified date. If you cannot think of a topic see me by before the deadline (do not wait until the last minute!) and I will help you choose one. Note that you will be responsible for finding references on the topic, although I will try to give you what help I can.

Length

The paper should be approximately 3,000 words in length. (Length excludes reference list). Do not exceed 4,500 words. The number of references will depend greatly on the nature of the paper. A typical number might be in the 7-12 range, with 5 as an absolute minimum.

Outline & Complete Reference List

Part of presenting an argument is to develop a coherent, logical structure. Once your topic has been approved you should develop a one-page outline that clearly shows how you will develop your presentation. The outline will be graded, and must be sufficiently detailed that the essence of your paper is shown. Thus, a list such as: Introduction, methods and conclusion, is totally inadequate. The outline needs to be sufficiently detailed that your line of reasoning is quite clear. You need to outline the specific ideas for each paragraph, and the journal references for those particular ideas. Remember to include a complete reference list, using the appropriate format.

Grading

The paper will be graded based on content and presentation. You should therefore present a logical, coherent discussion. See the grading rubric below.

Plagiarism

Plagiarism is a serious offense. Cite all your sources, and be careful to use quotation marks if you use phrases or sentences that mirror those of your sources. Particularly watch out for "patchwork plagiarism." However, you can re-use material from your paper reviews.

References

Include a list of references, using a consistent format, such as the one for the paper reviews.

Some General Comments

- Aim your paper at a fellow student who has mastered the content of this course. Thus, for example, there is no need to define standard remote sensing terms or concepts such as infrared or pixel.
- The shortness of this assignment should not be mistaken for an indication that the work should be shallow. It means instead that you must polish your work - there is no room for waffling or vagueness. I expect a compact, in-depth discussion.
- Don't introduce remote sensing - rather introduce the aspect of remote sensing you are discussing, and why it is important. You can assume the reader is familiar with the basics of remote sensing.
- Please put page numbers on your pages!
- Most papers published in journals describe successful experiments. Thus, you get the impression that remote sensing can solve every problem. It can't. I expect a critical look at both the advantages and disadvantages with remote sensing as applicable to your paper.
- You need a focus. This applies to the paper topic itself, and the content. Thus, if you discuss remote sensing for urban studies, don't discuss every aspect of all the satellite-borne sensors in the text. However, you might want to discuss the aspects that are relevant to urban studies, such as spatial resolution, historical data archives, spectral response at key wavelengths, such as thermal, visible, and microwave. By comparison, a geological application discussion would probably focus mainly on the spectral resolution and the nature of the interaction of radiation with rocks.
- Often there is much uncertainty as to how much depth is required. This partly depends on the topic. If you have a broad topic, such as a survey of applications (e.g. forestry) you obviously cannot achieve the same depth as you would in a paper focusing on a narrower subject, such as remote sensing of pest infestation in forests.
- A paper topic that is a survey of some aspect of remote sensing will require you to review many papers (and possibly to consult a few texts), whereas a narrow paper topic would almost certainly require you to consult fewer references, though, as discussed above, you would need to understand them in greater detail. Since the topic requires you to put the subject in a critical context you will need at least 4 scholarly or scientific papers to work from, and preferably more.
- Scholarly and scientific journals (e.g. *Photogrammetric Engineering and Remote Sensing*) are distinguished from trade magazines (e.g. *GIS World* and *EOM*) by having a complex system of peer-review. Generally, if an article does not have an abstract and a reference list that is a bad sign!

- The term paper must have remote sensing at its core - not GIS or any other topic. You could, however, discuss some aspect of GIS and remote sensing (e.g. the integration of remote sensing with GIS.) Furthermore, if you discuss a remote sensing application (e.g. using remote sensing to study El Nino), make sure that the bulk of the paper is not the application itself (El Nino in my example), but rather describes how one would use remote sensing to study the application (how does one measure and analyze the phenomena associated with El Nino (e.g. oceanic and atmospheric conditions) using remote sensing?)
- Figures and tables can be useful ways of presenting information. All figures and tables should be numbered, should be given titles (with a reference to their source), and should be cited in the text. (Figures are titled below the figure, tables above the figure.)
- The strongest papers present a well-thought out overview of a topic, comparing and contrasting the different papers you read. The weakest papers tend to be summaries of individual case studies, with no clear link between the studies. If you do present a number of case studies, be sure to show the links between the studies, and develop a strong concluding section drawing out common or contrasting themes.
- Conclusions tend to be the weakest parts of the term papers. A strong conclusion is not simply a statement that the paper topic is an interesting or important area. You should go back to the specifics of the topics you have covered, and make two or three general comments about the topic that can be inferred from your paper.
- References: Provide a reference list, using the format instructions given for the paper reviews. Be sure to review how to cite (refer to) papers in the text, given in the same instructions.
- Remember to check the grading rubrics earlier in this document.

Some Previous Topics

Applied

- Use of thermal infrared imagery for monitoring wildlife
- Identification of geomorphic surfaces based on digital analysis of remotely sensed data
- Remote sensing of forests (or wetlands, or agriculture, or oceans, or bird habitat, etc.)
- Remote sensing of lineaments for groundwater exploration
- Remote sensing of Pluto
- Monitoring environmental hazards using remotely sensed data
- Aerial video: Help or Hindrance to Foresters?
- Studying urban heat islands through remote sensing
- Distinguishing old-growth and mature forests with satellite imagery
- The use of remote sensing technology to assess canopy chemistry
- Remote sensing of humanitarian crises

Theoretical and Image Processing

- Scale and remote sensing

- Accuracy assessment in remote sensing: A comparison of error matrices and fuzzy sets
- The commercialization of remote sensing: Success or failure?
- An overview of topographic normalization algorithms
- Low cost acquisition of remotely sensed data
- Is remote sensing an invasion of your privacy? Remote sensing and legal issues.

Term Paper Rubric (100 Points Maximum)

Grade	Content	Structure	Introduction	Body	Conclusion	References	Grammar & Spelling
100	Comprehensive material. Shows insight. Excellent linkages between ideas	Structure is logical; ideas developed systematically, excellent transitions.	Describes theme of paper and places in context	Develops ideas, goes well-beyond mere summary	Makes connections between papers, draws common themes	Comprehensive, extensive and timely reference list. References support thesis. References correctly formatted	Correct, with good, *technical English style.* No typographical mistakes (i.e. was proof-read carefully). Engaging style.
90	Comprehensive material, key points explained clearly	Structure is logical and well-thought out	Describes themes of paper	Develops ideas, goes well beyond mere summary	Summarizes major content, makes connections, draws contrasts	Comprehensive and extensive reference list. Follows correct format.	Correct grammar and spelling, only occasional mistakes. Above-average command of technical English.
80	Relatively comprehensive material, major points identified and explained	Structure is good	Describes themes of paper	Develops ideas, summarizes major ideas clearly	Summarizes major content	Moderate reference list, mostly follows correct format.	Mostly correct grammar and spelling, but minor mistakes and or colloquial language. Style is above-average
70	Topic is mostly covered, some material poorly developed or not covered	Structure is pedestrian, or confused in places, transitions not well developed	Introduction is limited or poorly connected to the paper's themes	Ideas poorly developed, does not capture range of the topic	Summarizes major content	Limited reference list; Inconsistent or incorrect reference format	Does not use technical language (e.g. extensive use of colloquialisms), mistakes common. Style is satisfactory or weak.
60	Summary is perfunctory, limited understanding shown	Confused structure	Introduction has limited connection to the main themes of the paper	Limited understanding of the ideas, limited development	Perfunctory, or not connected to the paper body	Missing or insufficient information to locate original article	Below-average, has major problems; for example, language is not easily understandable
50 and less	Weak content, limited or no understanding of the material.	Incoherent or no structure	Limited or confused introduction	Major themes not developed, or significant errors	Perfunctory or not connected to the paper body	Missing	Language is not understandable

Note: Any plagiarism in will result in a grade of 0. Additional penalties may apply.

For papers which are evaluated to fall in different grade levels for different categories within the rubric, the final grade will be an average of the individual categories involved.

Citation Format

Adapted From: Remote Sensing of Environment

References

References should be cited in the text by the name(s) of the author(s), followed by the year of publication in parentheses, e.g., Baret and Guyot (1991). Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either "Unpublished results" or "Personal communication". Citation of a reference as "in press" implies that the item has been accepted for publication and a copy of the title page of the relevant article must be submitted.

Reference Management Software

This journal has standard templates available in key reference management packages EndNote (http://www.endnote.com) and Reference Manager (http://www.refman.com). Using plug-ins to wordprocessing packages, authors only need to select the appropriate journal template when preparing their article and the list of references and citations to these will be formatted according to the journal style which is described below.

Reference Style

Text: Citations in the text should follow the referencing style used by the **American Psychological Association**. Details concerning this referencing style can also be found at http://linguistics.byu.edu/faculty/henrichsenl/apa/apa01.html.
Reference List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication.

Examples:

Journal:

Baret, F., & Guyot, G. (1991). Potentials and limits of vegetation indices for LAI and APAR assessment. *Remote Sensing of Environment*, 35, 161-173

Book

Schott, J.R. (1997). *Remote Sensing: The Image Chain Approach*. (pp. 52-62). New York: Oxford University Press

Edited Book

Kaufman, Y.J. (1989). The atmospheric effect on remote sensing and its corrections. In G. Asrar (Ed.), *Theory and Applications of Optical Remote Sensing* (pp. 336-428). New York: Wiley

Reports, Theses, and Other Work

Style as a journal article with as much source information as possible.

Web References

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references [should be] included in the reference list.

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