**Abstract**

Satellite imagery provides unique insights into various markets, including agriculture, defense and intelligence, energy, and finance. Several commercial imagery providers are using constellations of small satellites to exponentially increase the amount of images of the earth captured every day. This flood of new imagery is outgrowing the ability for organizations to manually look at each image that gets captured, and there is a need for machine learning and computer vision algorithms to help automate the analysis process. The aim of this project is to use neural networks and convolutional neural networks to detect the location of airplanes in satellite images. Automating this process can be applied to address many issues including monitoring airports for activity and traffic patterns, and defense intelligence.

**1 Introduction**

Aircraft is like

**1.2 Word Processing Software**

As detailed below, IJCAI has prepared and made available a set of LATEX macros and a Microsoft Word template for use in formatting your paper. If you are using some other word processing software (such as WordPerfect, etc.), please follow the format instructions given below and ensure that your final paper looks as much like this sample as possible.

**2 Related Work**

LATEX and Word style files that implement these instructions can be retrieved electronically. (See Appendix A for instructions on how to obtain these files.)

**2.1 Layout**

Print manuscripts two columns to a page, in the manner in which these instructions are printed. The exact dimensions for pages are:

* left and right margins: .75*"*
* column width: 3.375*"*
* gap between columns: .25*"*
* top margin—first page: 1.375*"*
* top margin—other pages: .75*"*
* bottom margin: 1.25*"*
* column height—first page: 6.625*"*
* column height—other pages: 9*"*

All measurements assume an 8-1/2*"* × 11*"* page size. For A4-size paper, use the given top and left margins, column width, height, and gap, and modify the bottom and right margins as necessary.

**2.2 Format of Electronic Manuscript**

For the production of the electronic manuscript, you must use Adobe’s *Portable Document Format* (PDF). A PDF file can be generated, for instance, on Unix systems using ps2pdf or on Windows systems using Adobe’s Distiller. There is also a website with free software and conversion services: http://www.ps2pdf.com/. For reasons of uniformity, use of Adobe’s *Times Roman* font is strongly suggested. In LATEX2e, this is accomplished by putting

\usepackage{times}

in the preamble.[[1]](#footnote-0)

Additionally, it is of the utmost importance to specify the American **letter** format (corresponding to 8-1/2*"* × 11*"*) when formatting the paper. When working with dvips, for instance, one should specify –t letter.

**2.3 Title and Author Information**

Center the title on the entire width of the page in a 14-point bold font. The title should be capitalized using Title Case. Below it, center author name(s) in a 12-point bold font. On the following line(s) place the affiliations, each affiliation on its own line using a 12-point regular font. Matching between authors and affiliations can be done using superindices. Additionally, a comma-separated email addresses list using a 12-point regular font is also allowed. Credit to a sponsoring agency can appear on the first page as a footnote.

**Blind Review**

In order to make blind reviewing possible, authors must omit their names and affiliations when submitting the paper for review. In place of names and affiliations, provide a list of content areas. When referring to one’s own work, use the third person rather than the first person. For example, say, “Previously, Gottlob [1992] has shown that…”, rather than, “In our previous work [Gottlob, 1992], we have shown that…” Try to avoid including any information in the body of the paper or references that would identify the authors or their institutions. Such information can be added to the final camera-ready version for publication.

**2.4 Abstract**

Place the abstract at the beginning of the first column 3*''* from the top of the page, unless that does not leave enough room for the title and author information. Use a slightly smaller width than in the body of the paper. Head the abstract with “Abstract” centered above the body of the abstract in a 12-point bold font. The body of the abstract should be in the same font as the body of the paper.

The abstract should be a concise, one-paragraph summary describing the general thesis and conclusion of your paper. A reader should be able to learn the purpose of the paper and the reason for its importance from the abstract. The abstract should be no more than 200 words long.

**2.5 Text**

The main body of the text immediately follows the abstract. Use 10-point type in a clear, readable font with 1point leading (10 on 11).

Indent when starting a new paragraph, except after major headings.

**2.6 Headings and Sections**

When necessary, headings should be used to separate major sections of your paper. (These instructions use many headings to demonstrate their appearance; your paper should have fewer headings). All headings should be capitalized using Title Case.

**Section Headings**

Print section headings in 12-point bold type in the style shown in these instructions. Leave a blank space of approximately 10 points above and 4 points below section headings. Number sections with arabic numerals.

**Subsection Headings**

Print subsection headings in 11-point bold type. Leave a blank space of approximately 8 points above and 3 points below subsection headings. Number subsections with the section number and the subsection number (in arabic numerals) separated by a period.

**Subsubsection Headings**

Print subsubsection headings in 10-point bold type. Leave a blank space of approximately 6 points above subsubsection headings. Do not number subsubsections.

**Special Sections**

You may include an unnumbered acknowledgements section, including acknowledgments of help from colleagues, financial support, and permission to publish.

Any appendices directly follow the text and look like sections, except that they are numbered with capital letters instead of arabic numerals.

The references section is headed “References,” printed in the same style as a section heading but without a number. A sample list of references is given at the end of these instructions. Use a consistent format for references, such as that provided by BibTEX. The reference list should not include unpublished work.

**2.7 Citations**

Citations within the text should include the author’s last name and the year of publication, for example [Gottlob, 1992]. Append lowercase letters to the year in cases of ambiguity. Treat multiple authors as in the following examples: [Abelson *et al.*, 1985] or [Baumgartner *et al.*, 2001] (for more than two authors) and [Brachman and Schmolze, 1985] (for two authors). If the author portion of a citation is obvious, omit it, e.g., Nebel [2000]. Collapse multiple citations as follows: [Gottlob *et al.*, 2002; Levesque, 1984a].

**2.8 Footnotes**

Place footnotes at the bottom of the page in a 9-point font. Refer to them with superscript numbers.[[2]](#footnote-1) Separate them from the text by a short line.[[3]](#footnote-2) Avoid footnotes as much as possible; they interrupt the flow of the text.

**3 Approach**

**3.1 Neural Networks**

Neural Network

Illustrations must be rendered electronically or scanned and placed directly in your document. All illustrations should be in black and white, as colored illustrations may cause problems. Line weights should be 1/2-point or thicker. Avoid screens and superimposing type on patterns, as these effects may not reproduce well.

Number illustrations sequentially. Use references of the following form: Figure 1, Table 2, etc. Place illustration numbers and captions under illustrations. Leave a margin of 1/4-inch around the area covered by the illustration and caption. Use 9-point type for captions, labels, and other text in illustrations.

**4 Evaluation**

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**Acknowledgments**

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**References**

[Abelson *et al*., 1985] Harold Abelson, Gerald Jay Sussman, and Julie Sussman. *Structure and Interpretation of Computer Programs.* MIT Press, Cambridge, Massachusetts, 1985.

[Baumgartner et al., 2001] Robert Baumgartner, Georg Gottlob, and Sergio Flesca. Visual information extraction with Lixto. In *Proceedings of the 27th International Conference on Very Large Databases*, pages 119–128, Rome, Italy, September 2001. Morgan Kaufmann.

[Brachman and Schmolze, 1985] Ronald J. Brachman and James G. Schmolze. An overview of the KL-ONE knowledge representation system. *Cognitive Science*, 9(2):171–216, April-June 1985.

[Gottlob et al., 2002] Georg Gottlob, Nicola Leone, and Francesco Scarcello. Hypertree decompositions and tractable queries. *Journal of Computer and System Sciences*, 64(3):579–627, May 2002.

[Gottlob, 1992] Georg Gottlob. Complexity results for non-monotonic logics. *Journal of Logic and Computation*, 2(3):397–425, June 1992.

[Levesque, 1984a] Hector J. Levesque. Foundations of a functional approach to knowledge representation. *Artificial Intelligence*, 23(2):155–212, July 1984.

[Levesque, 1984b] Hector J. Levesque. A logic of implicit and explicit belief. In *Proceedings of the Fourth National Conference on Artificial Intelligence*, pages 198–202, Austin, Texas, August 1984. American Association for Artificial Intelligence.

[Nebel, 2000] Bernhard Nebel. On the compilability and expressive power of propositional planning formalisms. *Journal of Artificial Intelligence Research*, 12:271–315, 2000.

1. You may want also to use the package latexsym, which defines all symbols known from the old LATEX version. [↑](#footnote-ref-0)
2. This is how your footnotes should appear. [↑](#footnote-ref-1)
3. Note the line separating these footnotes from the text. [↑](#footnote-ref-2)