

# Instruções para os autores do Academic Journal on Computing, Engineering and Applied Mathematics

# Author instructions for the Academic Journal on Computing, Engineering and Applied Mathematics

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Abstract— This document provides a template for preparation of original work whose authors wish to be published in the Academic Journal on Computing, Engineering and Applied Mathematics of the Universidade Federal do Tocantins Tocantins, Brazil. The first recommendation is the summary must contain between 150 and 200 words in a single paragraph. In this text section, it is expected a summary including the context, motivation, methodology, the most original contributions, results, and conclusions of your work. In addition, bibliographic citations, acronyms, or formulas should be avoided in the abstract as well as in the title. It is also strongly recommended to avoid any references to figures or tables in this section. Finally, it is a good practice to write your article by inserting text to and deleting from this template file in order to maintain the predefined styles.

**Keywords**— First word or key phrase, second word or key phrase, third word or key phrase. (Place between three and six key words or phrases separated by a comma, which represent the theme of your work)

Resumo— It is expected the same text inserted in the "abstract" section properly translated to Brazillian Portuguese.

Palavras-chave— Translate to Brazillian Portuguese the same words and phrases written above.

#### I. Introduction

The Academic Journal on Computing, Engineering and Applied Mathematics is the official publication body of this Institution, which belongs to the Universidade Federal do Tocantins, Palmas/TO, Brazil. Its objective is to disseminate original works that contribute to the development of the computer science, engineering and applied mathematics. It is published in electronic format with a quarterly frequency.

This journal accepts papers written in English or Portuguese. The default option is english, but you can change that by replacing the eng option to por at the beginning of this document. AJCEAM also has two types of documents: *Research Papers* which should at least five pages and a maximum length of ten pages; and while *Brief Communication* 

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with no more than four pages.

This document is based on the IEEE template used for most of its publications and conferences. However, some changes have been made, for example, the top and left margins have been set to 2cm as well as the right and bottom margins have been set to 1.5cm. The column width has been set at 8.5cm, with a separation of 0.5cm between them. In addition, a page header has been moved to the right side indicating the article code (which will be completed in the final editing and publishing process). Only the page number is included in the footer.

The elementary definitions of style are Times or Times New Roman font for all parts of the document, size 20pt for the title (in the option of papers in Portuguese, it must be included a title in English with 14pt below the title in Portuguese), 12pt for the authors, 9pt and italic for the line of the institution to which the authors belong, 9pt for the abstract and keywords (in the option of papers in Portuguese, it must be included an abstract and keywords in English above

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the abstract and keywords in Portuguese), 10pt for the normal text and equations, and 12pt for section titles, 11pt for the level 1 title, italic for the level 2 and 3 titles, 9pt for the titles epigraphs of the figures, tables, and references (all these definitions are already fixed in the provided class file). Use *italics* to highlight a term (not underline). Despite all these details and how many others that could be given, it is recommended to write your article again by copying, pasting and replacing text from this document. This is the easiest and safest way to respect the defined styles. Please do not redefine any element of the style (typography, spaces between texts, margins, or other measures defined in the class file).

The general structure expected for this article includes sections such as Introduction, Materials, Methods, Results, Discussion, Conclusions, Acknowledgments and References. These titles can be combined in pairs in the same section and the titles Future Works and Acknowledgments are totally optional. It is common for the Methods section to have another title more related to the original contribution of the article, but the remaining sections are presented with the titles listed above. If there are demonstrations or other extensive mathematical developments, it is recommended to group them in Appendices before bibliographic references.

More details about the sections of the document and the formats for inserting different types of objects, such as equations, figures and tables, will be given below.

# II. FORMATS FOR INSERTED OBJECTS

In the format of this publication the sections and subsections of the document are not numbered and inserted with the traditional commands of LATEX, that is

\section{Section name}
\subsection{Subsection Name}
\subsubsection{Subsubsection Name}

The format for the paragraphs already includes an automatic indent in the first line and an extra space for the separation between paragraphs.

## a. Equations

The minor equations or definitions of variables can be inserted directly in the paragraph line, for example, consider that you want to define a story  $\mathbf{h}_i^n = w_{i-1}.w_{i-2}, \dots, w_{i-n+1}$  associated with a  $w_i$  symbol. Note that a simple way to ensure uniformity in the style of the equations is to write the mathematical formulations always in the corresponding environment, that is, using a + b to write for example a + b (do not write directly as the text a + b). On the other hand, remember that the units of measurement should always be written in *round* format, so that they are not confused with variables (for example, a + b = 100 cm instead of a + b = 100 cm).

To insert more complex equations or to be referenced, it is recommended to use the equation environments available in the package amsmath, remembering that the command \begin{equation} Automatically number the equations. To write equations without numbering use \begin{equation\*} or simply \$\$<expresión>\$\$ to get the expression on a separate line, for example

$$\frac{a+b+c}{2}=d.$$

In the case of a numbered equation, its tag must be defined with the command  $\label{ec-1}$ :

$$P_l(w_i|\mathbf{h}_i^k) = \sum_{j=0}^{k-1} \lambda_j \hat{P}(w_i|\mathbf{h}_i^j). \tag{1}$$

To refer to this equation from the text, use the command \eqref{ec-1}, which automatically places the number of the equation in parentheses. For example, "in eq. (1) you can see the estimate of the probability of a story from the simple linear combination of lower order stories." Remember that the use of *in quotation marks* in LATEX must be done using the corresponding commands, that is, using 'text' to get "text".

If your work involves the use of extensive mathematical formulations as in eq. (2), which cannot be displayed correctly in the two-column format, you can use an extended float with the command  $\left\{ \frac{figure^*}{t} \right\} = 0$  to arrange the equation in the total width of the page and at the top of the text. Remember to correctly use the delimiters (), [], {} through the commands  $\left\{ \frac{ft^*}{t} \right\} = 0$  that its size automatically adjusts to the mathematical expression.

#### b. Figures

Figures should be properly referenced using the traditional LATEX commands, and should never be placed as loose elements within the text. The figure caption is automatically placed using the environment

```
\begin{figure}[!tb]
  \centering
  \includegraphics[<options>]{<file>}
  \caption{Epigraph} \label{<label>}
\end{figure}
```

and filling in the corresponding field in \caption{<>} (see Fig. 1). The figures can be contained in PDF, JPG or PNG files, among others. Within the field [<options>] you can use the [width=.8\columnwidth] if it is necessary to adjust the size of the figure, as an example the factor .8 has been set.

Preferably, the figures should be arranged at the beginning or end of a column of text (for which the [!tb] option is used), and in general it is not advisable to arrange the figures on special pages at the end from work. Do not include additional breaks or spaces at the ends of the figures as these are duly defined in the class file. If Cartesian axes are used in the figure, always remember to describe what each axis (labels) corresponds to with a font of size no smaller than 7 pt for easy reading. To refer to a figure, use the abbreviated form Fig. followed by the \ref{label} command, except when it is at the beginning of a paragraph, in which case the whole word should be used.

If possible, do not include colors in the graphics, preferably use different types of lines. Also, keep in mind that vectorized graphics provide better electronic and print quality, therefore, insert all graphics with some vectorized format or, if it were a more complex photograph or image, use formats with lossless compression of information (JPG, PNG, TIF, GIF, etc. formats can be configured). To include figures that need to be displayed in the total width of the page, the



$$b = \left\{ \frac{1}{\alpha_1 + 1} (x_s - x_i)^{\alpha_1 + 1} + \frac{k}{\alpha_2 + 1} \left[ (c - x_i)^{\alpha_2 + 1} - (x_s - x_i)^{\alpha_2 + 1} \right] + \frac{\beta}{\beta + 1} \left[ (x_s - x_i)^{\alpha_1} - (x_s + x_i)^{\alpha_2} \right] \right\}^{-1}. \tag{2}$$

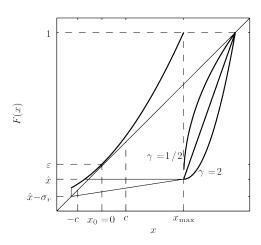


Fig. 1: Outline of the map used indicating the different ways of reinjection and the effect of noise.

\begin{figure\*} Environment must be used again, as in the case of Fig. 2.

#### c. Tables

It is preferable that the tables are designed using the LATEX commands defined for this purpose, and not that they are inserted as image files as this is detrimental to the quality of the document. However, this option may be acceptable if the insertion is made from a vectorized format that respects the size and style of the typography. The heading of the tables is markedly different at the bottom of the figures. In this case it is placed above the table, with font size 8 pt and centered paragraph. As in the figures, it is preferable that the tables are at the beginning or at the foot of a column. The size of the text within the tables should not be less than 7 pt or more than 10 pt (the font size used in the general text). An example of this style can be seen in Table 1.

# d. Bibliographic citations

Bibliographic citations will be made in the IEEETran system, which uses the [x] format to indicate the references within the text. For this task, the template uses Bibtex, so the references must be included in an external \*.bib file (References.bib in this example). In this way, the reference to a bibliographic citation is made with the command \cite{<label>}, to obtain for example: "as seen in the book by [1]".

**TABELA 1:** FINAL RESULTS AND RELATIVE ERROR REDUCTION (AVERAGES OVER 10 TRAINING AND TEST PARTITIONS).

Recognition Errors	SER %	WER %	WAER %	Reduction % WER
Reference	38.30	7.54	8.53	_
HMM-PASS	30.55	5.36	6.67	28.91
1-PASS	25.50	4.76	5.70	36.87

References need to be cited in text. Multiple references are each numbered with separate brackets. When citing a section in a book, please give the relevant page numbers. In text, refer simply to the reference number. Do not use "Ref." or "reference" except at the beginning of a sentence: "Reference [3] shows ... ." Please do not use automatic endnotes in Word, rather, type the reference list at the end of the paper using the "References" style.

Reference numbers are set flush left and form a column of their own, hanging out beyond the body of the reference. The reference numbers are on the line, enclosed in square brackets. In all references, the given name of the author or editor is abbreviated to the initial only and precedes the last name. Use them all; use et al. only if names are not given. Use commas around Jr., Sr., and III in names. Abbreviate conference titles. When citing journals, provide the issue number, page range, volume number, year, and/or month if available. When referencing a patent, provide the day and the month of issue, or application. References may not include all information; please obtain and include relevant information. Do not combine references. There must be only one reference with each number. If there is a URL included with the print reference, it can be included at the end of the reference.

Other than books, capitalize only the first word in a paper title, except for proper nouns and element symbols.

In the section of the Bibliography the style for the different types of bibliographic citations consists of:

- Book: Authors, year in parentheses. Title in italics, editorial, place of publication [2]. It is included using the @book option in the references file.
- Book chapter: Authors, year in parentheses. Chapter title in quotes. In: book title in italics of the book, pages, editorial, place of publication [1]. It is included with the @inbook field in the reference file.
- Article in periodic magazine: Authors, year in parentheses. Title of the article in quotation marks, name of the magazine in italics, volume, number in parentheses, pages [3, 4]. It is included using the @article option.
- Conferences: Authors, year in parentheses. Article title in quotes. In: title of the memoirs or of the event in italics, editorial of the publication of the memoirs, place of publication, pages [5]. It is included with the @inproceedings field in the reference file.
- Website: Authors, year in parentheses. Title of the article in quotes, taken from <URL>, query date of the web page in parentheses [6]. It is included with the @webpage option.
- Technical report: Authors, year in brackets. Title of the report in quotes, "Report No", institution in italics, place of publication [7]. It is included using the @techreport field.

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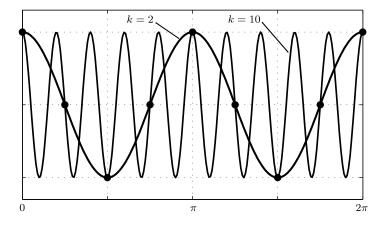


Fig. 2: Example of the aliasing that occurs in a grid with N = 8 nodes. Both modes (k = 2 and k = 10) take the same values at the grid points.

- Thesis, thesis or final work: Authors, year in parentheses. Title in italics, type of work. Institution, place of presentation [8]. It is included using the @thesis field in the reference file.
- Manual or technical report: Authors, year in parentheses. Title in italics, organization or institution, place of publication [9]. It is included with the @manual option.
- Other forms of communication: to reference other forms of communication, you must always specify the author or entity, the year and the way in which the communication was made. You can optionally include a title and an explanatory note [10]. These types of references are included using the @other field.

The bibliographic references section is titled as "References" (or with its equivalent depending on the chosen language) and has a particular style for the paragraph, where the indentation is eliminated and the font size is reduced (fixed at 8 pt ). References should be presented in alphabetical order taking into account the last name of the first author, regardless of the order of appearance in the text. Remember that all references included in the bibliography must be duly cited in the text.

To fully satisfy the definitions established for the bibliography and facilitate subsequent editing and publishing tasks, it is strongly recommended to use the reference style provided, including bibliography by the command

\insertbibliography{<file.bib>}

at the end of manuscript.

#### e. Other general recommendations

Define properly each of the acronyms used describing their meaning the first time they appear in the text. For example, "such a relationship is known as the mass ratio (RGM)". Once defined, always use the acronym instead of the full term. Remember to define each of the symbols that appear in the mathematical expressions and do not forget to clarify the notation used when using special or unusual mathematical operators. The use of capital letters should be made according to the general conventions, that is, at the beginning of a sentence after a period, in proper names, in acronyms, etc.,

and in titles according to what is defined in the work format. If in doubt, contact ajceam@gmail.com.

#### III. CONCLUSIONS

The conclusions should present a review of the key points of the article with special emphasis on the analysis and discussion of the results that were made in the previous sections and in the applications or extensions of these. You should not reproduce the summary in this section or repeat paragraphs already included in other sections of the work.

#### IV. ACKNOWLEDGMENT

In the event that there are acknowledgments, references to research projects, or work-financing entities, these should be included in the "Acknowledgments" section after the conclusions of the work. Verify correctly place the names and / or codes corresponding to research projects, institutions, financing programs, etc., involved in the work.

#### A. APPENDICES

In some situations it is convenient to include a section of appendices with their corresponding subsections.

#### a. Demonstrations

Demonstrations can be included in the main text provided that their extension and complexity do not distract the reader from the most relevant contents of the work. Otherwise, it is recommended to provide only the final results in the text including the demonstrations in an appendix at the end of the work.

#### b. Algorithms

In the same way as in the previous case, provided that the algorithms are not too extensive, they can be included within the main body of the work, otherwise they should be arranged in an appendix at the end of the work.

#### c. Other data

The inclusion of technical details, accessory measurements, data tables or other information relevant to the work should



be done in the form of an appendix when justified, otherwise they can be included directly in the main body of the text when reference is made to the same.

### REFERÊNCIAS

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