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Abstract

This is the abstract for this article. If you are making your code available, do not link to it in the abstract since many indexing services will automatically remove or redact the link. Instead, we are requiring every paper to have an initial statement on data and code availability right after the abstract.

Data and Code Availability This initial paragraph is mandatory. Briefly state what data you use (including citations if appropriate) and whether the data are available to other researchers. If you are not sharing code, you must explicitly state that you are not making your code available. If you are making your code available, then at the time of submission for review, please include your code as supplemental material or as a code repository link; in either case, your code must be anonymized. If your paper is accepted, then you should de-anonymize your code for the camera-ready version of the paper. If you do not include this data and code availability statement for your paper, or you provide code that is not anonymized at the time of submission, then your paper will be desk-rejected. Your experiments later could refer to this initial data and code availability statement if it is helpful (e.g., to avoid restating what data you use).

Institutional Review Board (IRB) This initial paragraph is mandatory. If your research requires IRB approval or has been designated by your IRB as

Not Human Subject Research, then for the cameraready version of the paper, you must provide IRB information (and at the time of submission for review, you can say that this IRB information will be provided if the paper is accepted). If your research does not require IRB approval, then you must state this to be the case.

1. Introduction

This is a sample article that uses the jmlr class. Please follow the guidelines in this sample document as it can help to reduce complications when combining the articles into a book. Please avoid using obsolete commands, such as \rm, and obsolete packages, such as epsfig.² Some packages that are known to cause problems for the production editing process are checked for by the jmlr class and will generate an error. (If you want to know more about the production editing process, have a look at the video tutorials for the production editors at http://www.dickimaw-books.com/software/makejmlrbookgui/videos/.)

Please also ensure that your document will compile with PDFIATEX. If you have an error message that's puzzling you, first check for it at the UK TUG FAQ https://texfaq.org/FAQ-man-latex. If that doesn't help, create a minimal working example (see https://www.dickimaw-books.com/latex/minexample/) and post to somewhere like TEX on StackExchange (http://tex.stackexchange.com/) or the IATEX Community Forum (http://www.latex-community.org/forum/).

^{*} These authors contributed equally

An example data availability statement: This paper uses the MIMIC-III dataset (Johnson et al., 2016b), which is available on the PhysioNet repository (Johnson et al., 2016a).

^{2.} See http://www.ctan.org/pkg/12tabu

NOTE:

This is an numbered theorem-like environment that was defined in this document's preamble.

1.1. Sub-sections

Sub-sections are produced using \subsection.

66 1.1.1. Sub-sub-sections

67 Sub-sub-sections are produced using 68 \subsubsection.

Sub-sub-sub-sections Sub-sub-sections are
 produced using \paragraph. These are unnumbered
 with a running head.

72 Sub-sub-sub-sub-sections Sub-sub-sub-sub-73 sections are produced using \subparagraph. These 74 are unnumbered with a running head.

2. Cross-Referencing

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Always use \label and \ref (or one of the commands described below) when cross-referencing. 77 For example, the next section is Section 3 but you 78 can also refer to it using Section 3. The jmlr class provides some convenient cross-referencing com-80 mands: \sectionref, \equationref, \tableref, \figureref. \algorithmref. \theoremref. 82 \lemmaref, \remarkref, \corollaryref, 83 \definitionref, \conjectureref, \axiomref, 84 \exampleref and \appendixref. The argument of these commands may either be a single label or a 86 comma-separated list of labels. Examples:

Referencing sections: Section 3 or Sections 1 and 3 or Sections 1, 3, 5.1 and 5.2.

Referencing equations: Equation (1) or Equations (1) and (3) or Equations (1), (2), (3) and (4).

Referencing tables: Table 1 or Tables 1 and 2 or Tables 1, 2 and 3.

Referencing figures: Figure 1 or Figures 1 and 2 or Figures 1, 2 and 3 or Figures 3(a) and 3(b).

Referencing algorithms: Algorithm 1 or Algorithms 1 and 2 or Algorithms 1, 2 and 3.

Referencing theorem-like environments: Theorem 1, Lemma 2, Remark 3, Corollary 4, Definition 5, Conjecture 6, Axiom 7 and Example 1.

Referencing appendices: Appendix A or Appendices A and B.

3. Equations

The jmlr class loads the amsmath package, so you can use any of the commands and environments defined there. (See the amsmath documentation for further details.³)

Unnumbered single-lined equations should be displayed using $\[$ and $\]$. For example:

$$E = mc^2$$

or you can use the displaymath environment:

$$E = mc^2$$

Numbered single-line equations should be displayed using the equation environment. For example:

$$\cos^2 \theta + \sin^2 \theta \equiv 1 \tag{1}$$

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This can be referenced using **\label** and **\equationref**. For example, Equation (1).

Multi-lined numbered equations should be displayed using the align environment.⁴ For example:

$$f(x) = x^2 + x \tag{2}$$

$$f'(x) = 2x + 1 \tag{3}$$

Unnumbered multi-lined equations can be displayed using the align* environment. For example:

$$f(x) = (x+1)(x-1)$$
$$= x^2 - 1$$

If you want to mix numbered with unnumbered lines use the align environment and suppress unwanted line numbers with \nonumber. For example:

$$y = x^{2} + 3x - 2x + 1$$
$$= x^{2} + x + 1$$
(4)

An equation that is too long to fit on a single line can be displayed using the split environment. Text can be embedded in an equation using \text or \intertext (as used in Theorem 1). See the amsmath documentation for further details.

^{3.} Either texdoc amsmath or http://www.ctan.org/pkg/

^{4.} For reasons why you shouldn't use the obsolete eqnarray environment, see Lars Madsen, *Avoid eqnarray!* TUGboat 33(1):21–25, 2012.

3.1. Operator Names

Predefined operator names are listed in Table 1. For additional operators, either use voperatorname, for example var(X) or declare it with \DeclareMathOperator, for example

132 \DeclareMathOperator{\var}{var}

and then use this new command. If you want limits that go above and below the operator (like \sum) use the starred versions (\operatorname* or \DeclareMathOperator*).

₃₇ 4. Vectors and Sets

Vectors should be typeset using $\ensuremath{\mbox{vec}}$. For example x. (The original version of $\ensuremath{\mbox{vec}}$ can also be accessed using $\ensuremath{\mbox{vergvec}}$, for example \vec{x} .) The jmlr class also provides $\ensuremath{\mbox{set}}$ to typeset a set. For example \mathcal{S} .

5. Floats

Floats, such as figures, tables and algorithms, are moving objects and are supposed to float to the nearest convenient location. Please don't force them to go in a particular place. In general it's best to use the htbp specifier and don't put the figure or table in the middle of a paragraph (that is make sure there's a paragraph break above and below the float). Floats are supposed to have a little extra space above and below them to make them stand out from the rest of the text. This extra spacing is put in automatically and shouldn't need modifying.

If your article will later be reprinted in the Challenges for Machine Learning, please be aware that the CiML books use a different paper size, so if you want to resize any images use a scale relative to the line width (\linewidth), text width (\textwidth) or text height (\textheight).

To ensure consistency, please don't try changing the format of the caption by doing something like:

\caption{\textit{A Sample Caption.}}

163 Or

164 \caption{\em A Sample Caption.}

You can, of course, change the font for individual words or phrases, for example:

167 \caption{A Sample Caption With Some
168 \emph{Emphasized Words}.}

5.1. Tables

Tables should go in the table environment. Within this environment use \floatconts (defined by jmlr) to set the caption correctly and center the table contents. The location of the caption depends on the tablecaption setting in the document class options.

If you want horizontal rules you can use the booktabs package which provides the commands \toprule, \midrule and \bottomrule. For example, see Table 3.

If you really want vertical lines as well, you can't use the booktabs commands as there'll be some unwanted gaps. Instead you can use LATEX's \hline, but the rows may appear a bit cramped. You can add extra space above or below a row using \abovestrut and \belowstrut. For example, see Table 4. However, you might want to read the booktabs documentation regarding the use of vertical lines.

If you want to align numbers on their decimal point, you can use the siunitx package. For example, see Table 5. For further details see the siunitx documentation⁵.

If the table is too wide, you can adjust the intercolumn spacing by changing the value of **\tabcolsep**. For example:

\setlength{\tabcolsep}{3pt}

If the table is very wide but not very long, you can use the sidewaystable environment defined in the rotating package (so use \usepackage{rotating}). If the table is too long to fit on a page, you can use the longtable environment defined in the longtable package (so use \usepackage{longtable}).

5.2. Figures

Figures should go in the figure environment. Within this environment, use \floatconts to correctly position the caption and center the image. Use \includegraphics for external graphics files but omit the file extension. Do not use \epsfig or \psfig. If you want to scale the image, it's better to use a fraction of the line width rather than an explicit length. For example, see Figure 1.

If your image is made up of IATEX code (for example, commands provided by the pgf package) you can include it using \includeteximage (defined by the jmlr class). This can be scaled and rotated in the

^{5.} Either texdoc siunitx or http://www.ctan.org/pkg/ siunitx

Table 1: Predefined Operator Names (taken from amsmath documentation)

\arccos	\arccos	\deg	\deg	\lg	\lg	\projlim	proj lim
\arcsin	\arcsin	\det	\det	\lim	\lim	\sec	\sec
\arctan	arctan	\dim	\dim	\label{liminf}	$\lim\inf$	\sin	\sin
\arg	arg	\exp	\exp	\limsup	\limsup	\sinh	\sinh
\cos	cos	\gcd	gcd	\ln	\ln	\sup	\sup
\cosh	\cosh	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	hom	\log	\log	\tan	tan
\cot	\cot	\inf	\inf	\max	max	\tanh	anh
\coth	\coth	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	inj lim	\min	\min		
\csc	\csc	\ker	ker	\Pr	\Pr		
		\varlims	sup $\overline{\lim}$	\varin	jlim \lim	1	
		\varlimi	$\inf \ \underline{\lim}$	\varpro			

Table 2: An Example Table

Dataset	Result
Data1	0.12345
Data2	0.67890
Data3	0.54321
Data4	0.09876

Table 5: A Table With Numbers Aligned on the Decimal Point

Dataset	Result
Data1	0.12345
Data2	10.6789
Data3	50.543
Data4	200.09876

Table 3: A Table With Horizontal Lines

Dataset	Result
Data1	0.12345
Data2	0.67890
Data3	0.54321
Data4	0.09876

Table 4: A Table With Horizontal and Vertical Lines

Dataset	Result
Data1	0.12345
Data2	0.67890
Data3	0.54321
Data4	0.09876



Figure 1: Example Image

same way as $\include graphics$. For example, see 214 Figure 2. 215

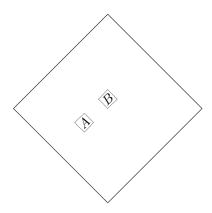


Figure 2: Image Created Using IATEX Code

If the figure is too wide to fit on the page, you can use the sidewaysfigure environment defined in the rotating package.

Don't use \graphicspath.⁶ If the images are contained in a subdirectory, specify this when you include the image, for example \includegraphics{figures/mypic}.

5.2.1. Sub-Figures

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Sub-figures can be created using \subfigure, which is defined by the jmlr class. The optional argument allows you to provide a subcaption. The label should be placed in the mandatory argument of \subfigure. You can reference the entire figure, for example Figure 3, or you can reference part of the figure using \figureref, for example Figure 3(a). Alternatively you can reference the subfigure using \subfigref, for example (a) and (b) in Figure 3.

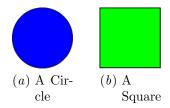


Figure 3: An Example With Sub-Figures.

By default, the sub-figures are aligned on the baseline. This can be changed using the second optional argument of \subfigure . This may be t (top), c (centered) or b (bottom). For example, the subfigures (a) and (b) in Figure 4 both have [c] as the second optional argument.

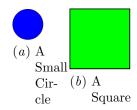


Figure 4: Another Example With Sub-Figures.

5.3. Sub-Tables

There is an analogous command \subtable for subtables. It has the same syntax as \subfigure de-

scribed above. You can reference the table using $\$ tableref, for example Table 6 or you can reference part of the table, for example Table 6(a). Alternatively you can reference the subtable using $\$ using $\$ butabref, for example (a) and (b) in Table 6.

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Table 6: An Example With Sub-Tables

(a)		(b)		
\mathbf{A}	${f B}$	\mathbf{C}	\mathbf{D}	
1	2	3	4	
		5	6	

By default, the sub-tables are aligned on the top. This can be changed using the second optional argument of $\$ This may be t (top), c (centered) or b (bottom). For example, the sub-tables (a) and (b) in Table 7 both have [c] as the second optional argument.

Table 7: Another Example With Sub-Tables

5.4. Algorithms

Enumerated textual algorithms can be displayed using the algorithm environment. Within this environment, use \caption to set the caption and you can use an enumerate or nested enumerate environments. For example, see Algorithm 1. Note that algorithms float like figures and tables.

Algorithm 1: The Gauss-Seidel Algorithm

- 1. For k = 1 to maximum number of iterations
 - (a) For i = 1 to n

$$\begin{array}{l} \text{i. } x_i^{(k)} = \frac{b_i - \sum_{j=1}^{i-1} a_{ij} x_j^{(k)} - \sum_{j=i+1}^n a_{ij} x_j^{(k-1)}}{a_{ii}} \\ \text{ii. If } \| \boldsymbol{x}^{(k)} - \boldsymbol{x}^{(k-1)} | < \epsilon \|, \text{ where } \epsilon \text{ is a} \end{array}$$

ii. If $\|\boldsymbol{x}^{(k)} - \boldsymbol{x}^{(k-1)} < \epsilon\|$, where ϵ is a specified stopping criteria, stop.

If you'd rather have the same numbering throughout the algorithm but still want the convenient indentation of nested enumerate environments, you can

^{6.} This is specific to the jmlr class, not a general recommendation. The main file that generates the proceedings or the CiML book is typically in a different directory to the imported articles, so it modifies the graphics path when it imports an article.

use the enumerate* environment provided by the jmlr class. For example, see Algorithm 2.

Algorithm 2: Moore's Shortest Path

Given a connected graph G, where the length of each edge is 1:

- 1. Set the label of vertex s to 0
- 2. Set i = 0

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- 3. Locate all unlabelled vertices adjacent to a vertex labelled i and label them i+1
- 4. If vertex t has been labelled,

the shortest path can be found by backtracking, and the length is given by the label of t.

otherwise

increment i and return to step 3

Pseudo code can be displayed using the algorithm2e environment. This is defined by the algorithm2e package (which is automatically loaded) so check the algorithm2e documentation for further details.⁷ For an example, see Algorithm 3.

Algorithm 3: Computing Net Activation

Input: $x_1, ..., x_n, w_1, ..., w_n$ Output: y, the net activation $y \leftarrow 0$;
for $i \leftarrow 1$ to n do $y \leftarrow y + w_i * x_i$;
end

6. Description Lists

The jmlr class also provides a description-like environment called altdescription. This has an argument that should be the widest label in the list. Compare:

add A method that adds two variables.

differentiate A method that differentiates a function.

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add A method that adds two variables.

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differentiate A method that differentiates a function.

7. Theorems, Lemmas etc

The following theorem-like environments are predefined by the jmlr class: theorem, example, lemma, proposition, remark, corollary, definition, conjecture and axiom. You can use the proof environment to display the proof if need be, as in Theorem 1.

Theorem 1 (Eigenvalue Powers) If λ is an eigenvalue of \boldsymbol{B} with eigenvector $\boldsymbol{\xi}$, then λ^n is an eigenvalue of \boldsymbol{B}^n with eigenvector $\boldsymbol{\xi}$.

Proof Let λ be an eigenvalue of \boldsymbol{B} with eigenvector ξ , then

$$B\xi = \lambda \xi$$

premultiply by \boldsymbol{B} :

$$egin{aligned} egin{aligned} egin{aligned} egin{aligned} egin{aligned} egin{aligned} eta & eta & \xi \ & = \lambda \lambda oldsymbol{\xi} \end{aligned} & since \ eta & \xi & \xi \end{aligned}$$

Therefore true for n = 2. Now assume true for n = k:

$$\mathbf{B}^{k}\mathbf{\mathcal{E}}=\lambda^{k}\mathbf{\mathcal{E}}$$

premultiply by B:

$$egin{aligned} m{B}m{B}^km{\xi} &= m{B}\lambda^km{\xi} \ \Rightarrow m{B}^{k+1}m{\xi} &= \lambda^km{B}m{\xi} \ &= \lambda^k\lambdam{\xi} & since \ m{B}m{\xi} &= \lambdam{\xi} \ &= \lambda^{k+1}m{\xi} \end{aligned}$$

Therefore true for n = k+1. Therefore, by induction, true for all n.

Lemma 2 (A Sample Lemma) This is a lemma.

Remark 3 (A Sample Remark) This is a remark.

Corollary 4 (A Sample Corollary) This is a corollary.

Either texdoc algorithm2e or http://www.ctan.org/ pkg/algorithm2e

Definition 5 (A Sample Definition) This is a definition.

Conjecture 6 (A Sample Conjecture) This is a conjecture.

308 Axiom 7 (A Sample Axiom) This is an axiom.

Example 1 (An Example) This is an example.

8. Color vs Grayscale

It's helpful if authors supply grayscale versions of their images in the event that the article is to be incorporated into a black and white printed book. With external PDF, PNG or JPG graphic files, you just need to supply a grayscale version of the file. For example, if the file is called myimage.png, then the gray version should be myimage-gray.png or myimage-gray.pdf or myimage-gray.jpg. You don't need to modify your code. The jmlr class checks for the existence of the grayscale version if it is print mode (provided you have used \includegraphics and haven't specified the file extension).

You can use \ifprint to determine which mode you are in. For example, in Figure 1, the purple ellipse represents an input and the yellow ellipse represents an output. Another example: important text!

You can use the class option gray to see how the document will appear in gray scale mode. Colored text will automatically be converted to gray scale in print mode.

The jmlr class loads the xcolor package, so you can also define your own colors. For example: XYZ.

The xcolor class is loaded with the x11names option, so you can use any of the x11 predefined colors (listed in the xcolor documentation⁸).

9. Citations and Bibliography

The jmlr class automatically loads natbib and automatically sets the bibliography style, so you don't need to use \bibliographystyle. This sample file has the citations defined in the accompanying Bib-TeX file chil-sample.bib. For a parenthetical citation use \citep. For example (Guyon and Elisseeff, 2003). For a textual citation use \citet. For example Guyon et al. (2007). Both commands may take a

comma-separated list, for example Guyon and Elisseeff (2003); Guyon et al. (2007).

These commands have optional arguments and have a starred version. See the natbib documentation for further details.⁹

The bibliography is displayed using bibliography.

Acknowledgments

Acknowledgments go here but should only appear in the camera-ready version of the paper if it is accepted. Acknowledgments do not count toward the paper page limit.

References

- I. Guyon and A. Elisseeff. An introduction to variable and feature selection. *JMLR*, 3:1157–1182, March 2003.
- I. Guyon, C. Aliferis, and A. Elisseeff. Causal feature selection. Technical report, Clopinet, 2007.

Alistair E. W. Johnson, Tom J. Pollard, and Roger G. Mark. MIMIC-III clinical database (version 1.4), 2016a.

Alistair E. W. Johnson, Tom J. Pollard, Lu Shen, Liwei H. Lehman, Mengling Feng, Mohammad Ghassemi, Benjamin Moody, Peter Szolovits, Leo Anthony Celi, and Roger G. Mark. MIMIC-III, a freely accessible critical care database. *Scientific Data*, 3(160035), 2016b. doi: https://doi.org/10.1038/sdata.2016.35.

Appendix A. First Appendix

This is the first appendix.

Appendix B. Second Appendix

This is the second appendix.

either texdoc xcolor or http://www.ctan.org/pkg/xcolor

Either texdoc natbib or http://www.ctan.org/pkg/natbib