

## RESEARCH ARTICLE

# Template for Journal of Computational Design and Engineering Manuscript Submissions

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## Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the study, the principal results and major conclusions. An abstract is often presented separately from the manuscript, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself. After the Abstract please include up to 6 keywords.

**Keywords:** Keyword1; keyword 2; keyword 3; keyword 4; keyword 5; keyword 6 (Up to 6 keywords)

## 1. Introduction to this Template

This is the  $\LaTeX$  template for Journal of Computational Design and Engineering manuscript submissions. **Please note that whilst this template provides a preview of the typeset manuscript for submission, it will not necessarily be the final publication layout.**

There are important commands in the preamble that you will need to modify for your own manuscript. If you are using this template on Overleaf, please switch the editor to Source code mode to view them; or if you prefer to stay in the Rich Text view, click on the title in the Rich Text view to display the preamble code.

Specify your manuscript's category with the `\papercat{...}` command in the preamble.

See the sample code in the preamble for a sample of how author and affiliation information can be specified.

Use later sections starting with 'Introduction' on page 3 to write your manuscript. The remainder of this current section will provide some sample  $\LaTeX$  code for various elements you may want to include in your manuscript.

### 1.1 Sectional Headings

You can use `\section{...}`, `\subsection{...}` commands to add more sections and subsections to your manuscript. Further sectional levels are provided by `\subsubsection`, `\paragraph` and `\subparagraph`. Should be numbered, with subsections numbered 1.1, 1.1.1, 1.1.2, etc.

#### 1.1.1 This is a 3rd level heading

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Received: a; Revised: b; Accepted: c

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## 1.2 Using the Style Template

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## 1.3 Citations and References

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association (APA), Seventh Edition, ISBN 978-1-4338-3215-4, copies of which may be ordered online (<https://apastyle.apa.org/products/publication-manual-7th-edition>). References in the Abstract should be avoided, but if essential, then cite the author(s) and year(s). 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.

### 1.3.1 A list of references

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.

### 1.3.2 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 can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

### 1.3.3 References in a Special Issue

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other manuscripts in the same Special Issue.

### 1.3.4 Examples for reference style

We provide several examples for reference style. Use the `\textcite` command for narrative citations, and `\parencite` command for parenthetical citations. This is a citation: (Jackson, 2019) and here are two more: (Grady et al., 2019; Piumsomboon et al., 2017).

- Reference to a journal publication: Grady et al. (2019) or (Grady et al., 2019)
- Reference to a journal publication with a manuscript number: Jerrentrup et al. (2018) or (Jerrentrup et al., 2018)
- Reference to a book: Jackson (2019) or (Jackson, 2019)
- Reference to a chapter in an edited book: Aron et al. (2019) or (Aron et al., 2019)
- Reference to a website: World Health Organization (2018, May 24) or (World Health Organization, 2018, May 24)
- Reference to a dataset: O'Donohue (2017) or (O'Donohue, 2017)
- Reference to conference proceedings: Piumsomboon et al. (2017) or (Piumsomboon et al., 2017)
- Reports: Stuster et al. (2018) or (Stuster et al., 2018)
- Reference to dissertations and theses: Miranda (2019) or (Miranda, 2019)

Note that APA Style uses sentence case for titles of articles, books, reports, webpages, and other works in reference list entries, even if the title case was used in the original work. Therefore, use double curly braces in the `title` field of `.bib` if you need to capitalize on a certain character.

Unlike the reference of a webpage, APA style in-text citation of a webpage includes the author and year, and does not include date information of the last accessed day. Note that Bib<sub>La</sub>T<sub>E</sub>X's current APA style implementation provides both year and date information in an in-text citation. The date information should be removed in final production.

You can find more information about the examples here (<https://apastyle.apa.org/style-grammar-guidelines/references/examples>).

## 1.4 Figures and Tables

Figures and tables can be added with the usual `figure` and `table` environments, e.g. Figure 1 and Table 1. Use `figure*` and `table*` if you need a two-column wide figure or table, as in Figure 2 and Table 2.

If you have a very wide table or figure, you can use `sidewaystable` or `sidewaysfigure`, as in Table 3: this will be rotated sideways and occupy a *single column* on its own.

If your table or figure is both wide and tall (so it wouldn't fit well in a single column with `sidewaystable` or `figure`), you can use `table` or `figure` inside a `landscape` environment for a full-page landscaped alternative. A page break will be inserted *imme-*

<sup>1</sup> This is the footnote text.

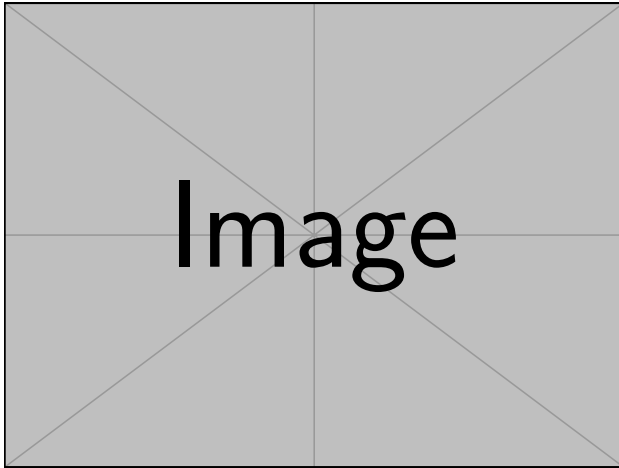


Figure 1: An example figure.

Table 1: An example table.

Item	Quantity	Notes
Widgets	42	Over-supplied*
Gadgets	13	Under-supplied

This is a table note.

\*Another note.

diately before and after the landscape environment (Table 4), so you'll need to carefully position it in a suitable location in your manuscript.

### 1.5 Some Mathematics Sample

Let  $X_1, X_2, \dots, X_n$  be a sequence of independent and identically distributed random variables with  $E[X_i] = \mu$  and  $\text{Var}[X_i] = \sigma^2 < \infty$ , and let

$$S_n = \frac{X_1 + X_2 + \dots + X_n}{n} = \frac{1}{n} \sum_{i=1}^n X_i \quad (1)$$

denote their mean. Then as  $n$  approaches infinity, the random variables  $\sqrt{n}(S_n - \mu)$  converge in distribution to a normal  $\mathcal{N}(0, \sigma^2)$ .

### 1.6 Algorithms, Program codes and Listings

Packages `algorithm`, `algorithmicx` and `algpseudocode` are used for setting algorithms in latex. For this, one has to use the below format:

```
\begin{algorithm}
\caption{<alg-caption>}\label{<alg-label>}
\begin{algorithmic}[1]
. . .
\end{algorithmic}
\end{algorithm}
```

We need to refer above listed package documentations for more details before setting `algorithm` environment. To set program codes, one has to use `program` package. We need to use `\begin{program} ... \end{program}` environment to set program codes. A fast exponentiation procedure:

---

#### Algorithm 1 Calculate $y = x^n$

---

**Require:**  $n \geq 0 \vee x \neq 0$

**Ensure:**  $y = x^n$

```
1:  $y \leftarrow 1$ 
2: if  $n < 0$  then
3:    $X \leftarrow 1/x$ 
4:    $N \leftarrow -n$ 
5: else
6:    $X \leftarrow x$ 
7:    $N \leftarrow n$ 
8: end if
9: while  $N \neq 0$  do
10:  if  $N$  is even then
11:     $X \leftarrow X \times X$ 
12:     $N \leftarrow N/2$ 
13:  else[ $N$  is odd]
14:     $y \leftarrow y \times X$ 
15:     $N \leftarrow N - 1$ 
16:  end if
17: end while
```

---

Similarly, for listings, one has to use `listings` package. `\begin{lstlisting} ... \end{lstlisting}` environment is used to set environments similar to `verbatim` environment. Refer `lstlisting`, package documentation for more details on this.

## 2. Introduction

This section states the objectives of the work and provides an adequate background, avoiding a detailed literature survey or a summary of the results.

## 3. Material and Methods

This section provides sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarised, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

The methods section should include the design of the study, the type of materials involved, a clear description of all comparisons, and the type of analysis used, to enable replication of the work. Ease of reproducibility is one of the key criteria on which reviewers will be asked to comment.

## 4. Theory/Calculation

This section should extend, not repeat, the background to the manuscript already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

## 5. Results

This section should comprise the study results presented in a logical sequence, supplemented with tables and/or figures. Take care that the text does not repeat data that are presented in the tables and/or figures.

**Table 2:** Automobile land speed records (GR 5-10)

Speed (mph)	Driver	Car	Engine	Date	Extra comments
407.447	Craig Breedlove	Spirit of America	GE J47	8/5/63	(Just to demo a full-width table with auto-wrapping long lines)
413.199	Tom Green	Wingfoot Express	WE J46	10/2/64	
434.22	Art Arfons	Green Monster	GE J79	10/5/64	
468.719	Craig Breedlove	Spirit of America	GE J79	10/13/64	
526.277	Craig Breedlove	Spirit of America	GE J79	10/15/65	
536.712	Art Arfons	Green Monster	GE J79	10/27/65	
555.127	Craig Breedlove	Spirit of America, Sonic 1	GE J79	11/2/65	
576.553	Art Arfons	Green Monster	GE J79	11/7/65	
600.601	Craig Breedlove	Spirit of America, Sonic 1	GE J79	11/15/65	
622.407	Gary Gabelich	Blue Flame	Rocket	10/23/70	
633.468	Richard Noble	Thrust 2	RR RG 146	10/4/83	
763.035	Andy Green	Thrust SSC	RR Spey	10/15/97	

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## 6. Discussion

This section should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

## 7. Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

## 8. Additional section

Authors can add or remove the sectional headings according to their type or structure of the manuscript.

## Acknowledgements

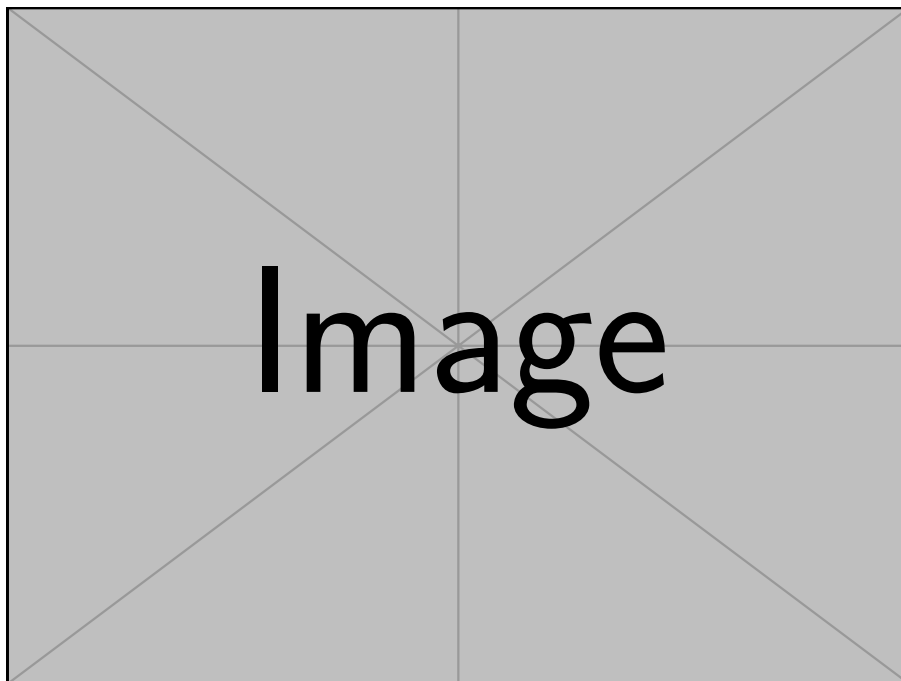
Please refer to your funding organisations to acknowledge their support.

## Conflict of interest statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## References

- Aron, L., Botella, M., & Lubart, T. (2019). Culinary arts: Talent and their development. In R. F. Subotnik, P. Olszewski-Kubilius, & F. C. Worrell (Eds.), *The psychology of high performance: Developing human potential into domain-specific talent* (pp. 345–359). American Psychological Association. <https://doi.org/10.1037/0000120-016>
- Grady, J. S., Her, M., Moreno, G., Perez, C., & Yelinek, J. (2019). Emotions in storybooks: A comparison of storybooks that represent ethnic and racial groups in the United States. *Psychology of Popular Media Culture*, 8(3), 207–217. <https://doi.org/10.1037/ppm0000185>
- Jackson, L. M. (2019). *The psychology of prejudice: From attitudes to social action* (2nd ed.). American Psychological Association. <https://doi.org/https://doi.org/10.1037/0000168-000>
- Jerrentrup, A., Mueller, T., Glowalla, U., Herder, M., Henrichs, N., Neubauer, A., & Schaefer, J. R. (2018). Teaching medicine with the help of “Dr. House.” *PLoS ONE*, 13(3), Article e0193972. <https://doi.org/10.1371/journal.pone.0193972>
- Miranda, C. (2019). *Exploring the lived experiences of foster youth who obtained graduate level degrees: Self-efficacy, resilience, and the impact on identity development* (Publication No. 27542827) [Doctoral dissertation, Pepperdine University]. PQDT Open. <https://pqdtopen.proquest.com/doc/2309521814.html?FMT=AI>
- O’Donohue, W. (2017). *Content analysis of undergraduate psychology textbooks* (ICPSR 21600; Version V1) [Data set]. ICPSR. <https://doi.org/10.3886/ICPSR36966.v1>
- Piumsomboon, T., Lee, G., Lindeman, R. W., & Billingham, M. (2017). Exploring natural eye-gaze-based interaction for immersive virtual reality. *2017 IEEE Symposium on 3D User Interfaces (3DUI)*, 36–39. <https://doi.org/10.1109/3DUI.2017.7893315>
- Stuster, J., Adolf, J., Byrne, V., & Greene, M. (2018). *Human exploration of mars: Preliminary lists of crew tasks* (Report No. NASA/CR-2018-220043). National Aeronautics and Space Administration. <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20190001401.pdf>
- World Health Organization. (2018, May 24). *The top 10 causes of death*. <https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>



**Figure 2:** An example wide figure. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

**Table 3:** Automobile land speed records (GR 5-10). This is the same table as before, but rotated sideways.

Speed (mph)	Driver	Car	Engine	Date	Extra comments
407.447	Craig Breedlove	Spirit of America	GE 147	8/5/63	(Just to demo a full-width table with auto-wrapping long lines)
413.199	Tom Green	Wingfoot Express	WE 146	10/2/64	
434.22	Art Arfons	Green Monster	GE 179	10/5/64	
468.719	Craig Breedlove	Spirit of America	GE 179	10/13/64	
526.277	Craig Breedlove	Spirit of America	GE 179	10/15/65	
536.712	Art Arfons	Green Monster	GE 179	10/27/65	
555.127	Craig Breedlove	Spirit of America, Sonic 1	GE 179	11/2/65	
576.553	Art Arfons	Green Monster	GE 179	11/7/65	
600.601	Craig Breedlove	Spirit of America, Sonic 1	GE 179	11/15/65	
622.407	Gary Gabelich	Blue Flame	Rocket	10/23/70	
633.468	Richard Noble	Thrust 2	RR RG 146	10/4/83	
763.035	Andy Green	Thrust SSC	RR Spey	10/15/97	

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**Table 4:** Automobile land speed records (GR 5-10). This is again the same table as before, but on a landscaped page. Note that a hard page break is inserted immediately before and after 1andscape, so you'll need to carefully position such an environment at a suitable location in your manuscript!

Speed (mph)	Driver	Car	Engine	Date	Extra comments
407.447	Craig Breedlove	Spirit of America	GE J47	8/5/63	(Just to demo a full-width table with auto-wrapping long lines)
413.199	Tom Green	Wingfoot Express	WE J46	10/2/64	
434.22	Art Arfons	Green Monster	GE J79	10/5/64	
468.719	Craig Breedlove	Spirit of America	GE J79	10/13/64	
526.277	Craig Breedlove	Spirit of America	GE J79	10/15/65	
536.712	Art Arfons	Green Monster	GE J79	10/27/65	
555.127	Craig Breedlove	Spirit of America, Sonic 1	GE J79	11/2/65	
576.553	Art Arfons	Green Monster	GE J79	11/7/65	
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633.468	Richard Noble	Thrust 2	RR RG 146	10/4/83	
763.035	Andy Green	Thrust SSC	RR Spey	10/15/97	

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