**ABSTRACT (Arial Black, Caps, 12,** spacing 12pt after**)**

A UNIQUE TITLE THAT DISTINGUISH YOUR WORK OR DESCRIBE YOUR CONTRIBUTION

Author Name1, Author Name2, Author Name3, …

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This document demonstrates the format requirements for technical report submitted to the Robocon Malaysia 2021. All authors are encouraged to read this document before preparation of your report. **Failure to fulfil the requirement for the report may cause your chapter to be retracted from publication.** Use this document as a template if you are using Microsoft Word 6.0 or later. Otherwise, use this document as an instruction set. **The abstract and all content must be written in English language**. Define all symbols used in the abstract. Do not cite references in the abstract. The abstract summarizes the report using **not more than 300 words** in a single paragraph. The purpose of an abstract is so that a reader can quickly get an idea of the main points and contributions of the work. **The abstract must include (1) the summary of robot design, (2) result of testing and/or simulation (i.e. time to complete certain tasks, robot’s performance etc.) (3) why your robot is unique or any knowledge contribution, (4) Sustainable Engineering practices and (5) possible real-world applications.**

1. **INTRODUCTION** (Arial Black, Caps, font 12, spacing 12pt after)

**Prevent copying paragraph from the website and rulebook.** The author must ensure that sufficient background and detail is provided. Be sure to define clearly the purpose of the research work/task i.e. **the problem that was examined**, **the specific objectives of the work** **and the motivation for the work**.

Let say for example, the problem that you are trying to overcome is a robot’s throwing mechanism and your main contribution will be in the development of a throwing mechanism. Therefore, provide necessary literature studies on the design of robots in relation to the problem. Perform benchmarking or identify pros and cons of those designs and identify where your work fits in.

You may also discuss (but not limited) about sustainability or practical issues that your design may be able to overcome.

1. **ARRANGEMENTS/CONTENTS**

Guideline for technical report writing. Your writings must include but not limited to this proposed guideline. The main body text should be divided into chapters such as,

1. Introduction
	* Explain your strategy to achieve the objective of the competition and to win.
	* Describe your design references.
2. Detailed Design
	* Mechanical designs - Pass Robot and Try Robot locomotion, pass, try and kick mechanisms.
	* Electronic design - circuit and components for Pass Robot and Try Robot.
	* Software design - programming for Pass Robot and Try Robot.
3. Presentation of Data/Simulation/Testing
4. Discussion/Evaluation of Findings
	* Include a sub-chapter on why your design is unique or if there is any contribution to knowledge.
5. **Sustainable Engineering practices**
	* **Explain how do you ensure that the development of your robots does not compromise the environment or deplete the materials for future generations and it could improve the quality of life for all.**
6. Conclusions, Limitations and Recommendations
7. Acknowledgments
8. References

(All figures must be labelled, clear and able to be read. Hand drawn figures are not acceptable)

1. **FORMAT AND LAYOUT**

Be sure the first line of each paragraph is in line with the first letter in the header. Set line spacing to be 1.5 lines under Paragraph setting. Use font’s settings with Times New Roman and size 12 for paragraph texts. Line spacing should be set to 1.5 lines. Paper length of the final version MUST be between 5 to 10 pages, *including* the bibliography. The paper is set to A4 (21cm x 29.7cm) and the margins should be set to Top (2.54cm), Inside (2.54cm), Outside (2.54c), Bottom (3.0cm) and Gutter (0.5cm) with mirror margins applied to the whole documents. **All materials must fit within these margin requirements** (including table, figure, graph, etc.). Reports must also be fully justified (i.e. have even left and right margins)

3.1 Figure, table and math (Arial Black, lower case, 12, spacing 12pt after and 6pt before)

Place figure captions below the figures; place table titles above the tables. If your figure has two parts, include the labels “(a)” and “(b)” as part of the artwork. Please verify that the figures and tables you mention in the text actually exist. Be sure to label your axis properly if required and write the quantity name with the units. **All figures must be mentioned in the paragraph,** i.e., Figures 2(a)-(d) show the materials used for the manual robot.



Figure 1: The caption should be placed after the figure

 

1. (b)

 

 (c) (d)

Figure 2: This is how to label multiple figures (a) Add a text box (b) then insert you figures in the box (c) make sure to set the text box line to ‘No Outline’ (d) All figures will remain within the margin

Table 1: The caption should be placed before the table

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Parameter 1** | **Parameter 2** | **Parameter 3** |
| Our | 1.0 | 1.0 | 1.0 |
| Yours | 2.0 | 2.0 | 2.0 |
| Theirs | 3.0 | 3.0 | 3.0 |

* 1. Units and Equations

International system unit (SI) shall be used. Equation number should be enclosed in parentheses on the right hand margin. They should be cited in the text, for example, Eq. (1) or Eqs.(1)-(3). Equation starts from left.

$x=Ax+Bu$ (1)

$\dot{y}=Cx+Du$ (2)

* 1. Citations

When citing a multi-author paper, you may save space by using “*et alia*”, shortened to “et *al.*” (not “*et. al.*” as “et” is a complete word.). However, use it only when there are three or more authors.

Thus, the following is correct: “Remembrall has been trendy lately. It was introduced by Weasley [1], and subsequently developed by Vector and Severus-Snape [2], and Nymphadora et *al.* [3].”

This is incorrect: “... subsequently developed by Vector et *al.* [2] ...” because reference [2] has just two authors.

List and number all bibliographical references in 11-point Times, single-spaced, at the end of your paper. When referenced in the text, enclose the citation number in square brackets, for example [4]. **Prevent citation from website and rulebook.**

References

[1] A. Weasley. Rememberall. *Journal of Rem*, 12(1):234–778, 2002.

[2] A. Vector and H.P. Severus-Snape. Rememberall revisited. *Journal of Rem*, 13 (1):234–778, 2003.

[3] A. Nymphadora, A. Hermione, and A. Hagrid. Does Rememberall Really Exists? *Journal of Rem*, 14(1):234–778, 2004.

[5] Authors. Rememberall tutorial, 2019. Supplied as additional material.

[6] A. D. Malfoy. What’s wrong with these equations? *Physics Today*, October 2018. http://www.whtvr.org/doc/slyth.pdf.