Technical Writing Skills

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Organization of the Report

Content of the Report

University of Reading Computer Science Report Template and Guide

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Author	Varun Ojha
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Abstract	University of Reading Computer Science Report Template and Guide. This is a report template as well as has instructions on writing various types of reports: e.g. science and lab, software enginging and algorithms.
Tags	University Thesis Project / Lab Report University of Reading

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University of Reading

Department of Computer Science

Computer Science Undergraduate Report Template and Report Writing Guide

FirstName(s) LastName

Supervisor: Supervisor's Name

A report submitted in partial fulfilment of the requirements of
the University of Reading for the degree of
Bachelor of Science in *Computer Science*

October 11, 2021

Abstract

250-300 Words Max

Summary of you research / Individual project:

- ✓ Key research question(s) / problem statement

- ✓ Overall project aims and objectives

- ✓ Key methodology / technique / data acquisition / adopted for analysis

- ✓ Key findings / results

- ✓ Your interpretation / critical assessment / conclusions

Acknowledgements

- Acknowledge the support you receive:

- Examples:

  ✓ Your supervisor(s)

  ✓ If you receive technical / data support from a company

  ✓ Any researcher / person that may have offer support in any form in your project (e.g., help with codes, proofreading you report etc.)

Table of Content

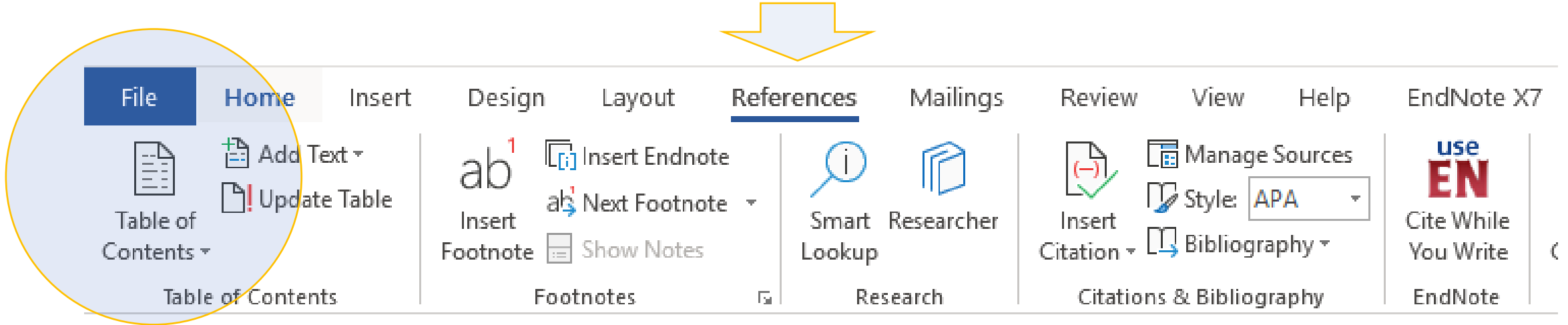Usually, Roman numbers

Usually, Indian numbers

MS Word

Latex

```
\documentclass{report}
    :
\begin{document}

\tableofcontents

:

\end{document}
```

Introduction

✓Background

✓Problem statement

✓Research question(s) / Hypothesis

✓Aims and Objectives

✓Solution Approach

✓Summary of contribution and achievements

Literature Review

✓ Project work set in the context of existing

literature / products / systems

✓ Discus (analyse) whether the intended

application/ system/ product is contextual /

relevant to the present world.

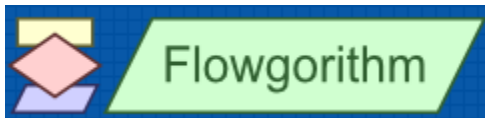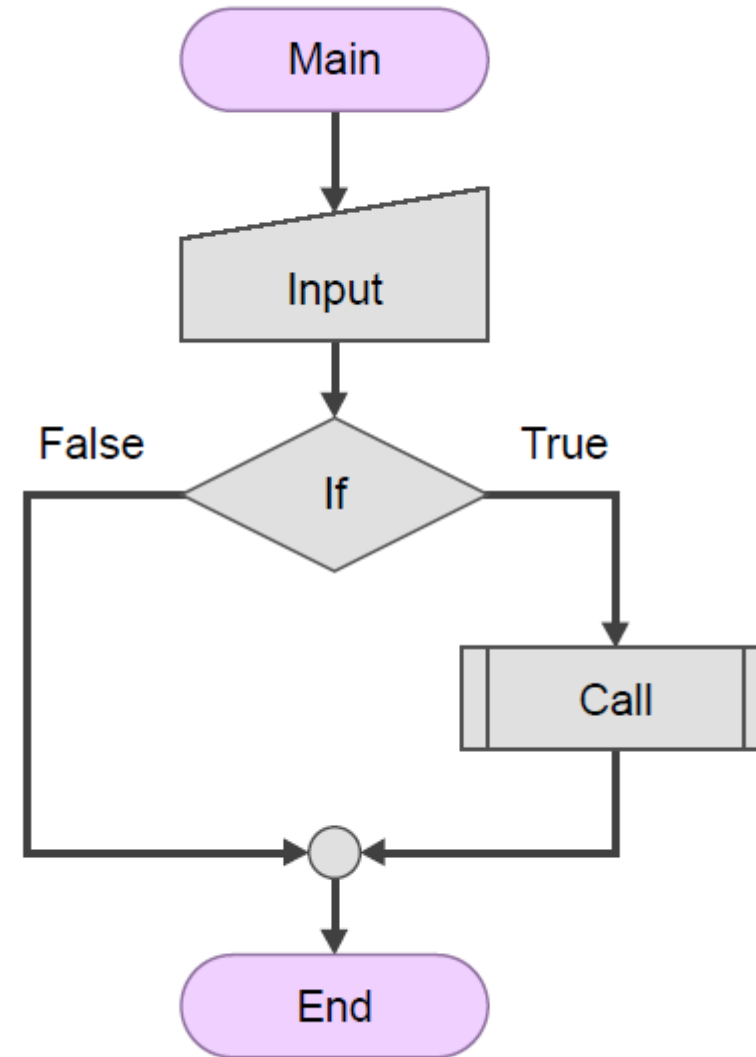✓ Critique of existing work against the own

intended development.

Methodology

✓Adapt existing algorithms / program / technology / methods

✓Use of appropriate design methods to represent conceptual

architecture of the intended work

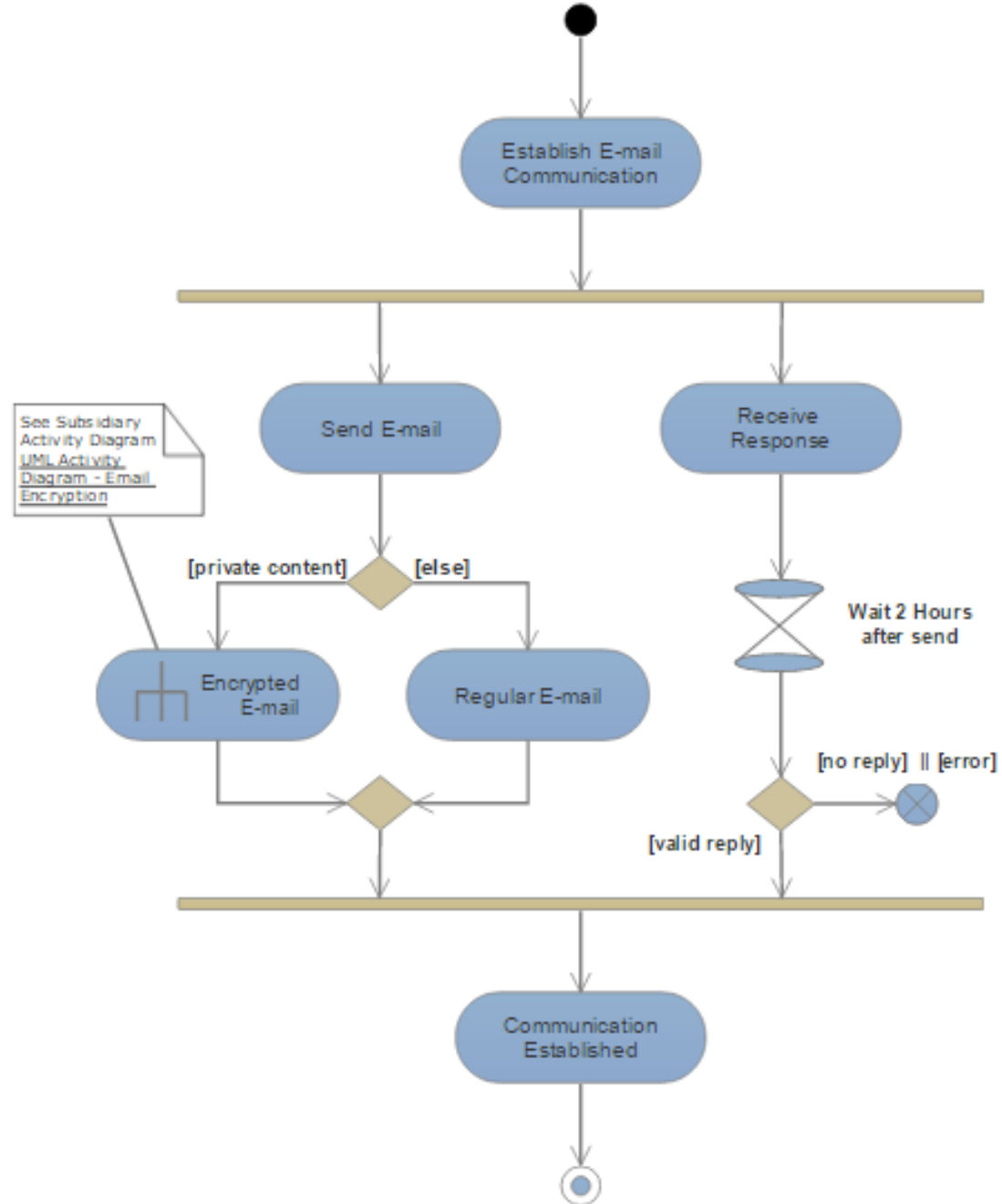✓In-depth justification of the design decision.

Methodology

Flowcharts

Methodology

UML Diagram

Use of Data/Database

✓ Description of dataset sources for the

indented work

✓ Use of proper techniques data cleansing

and pre-processing

✓ Description of statistical/ computational

analysis on the collected data.

Implementation of algorithm / program / system

✓Use of the implementation tools / Application Programming Interface (API)/ language.

✓Demonstration of technical specification of the implantation in the form executable algorithm / program

✓Outcome / Results for algorithm/ program / system meeting the indented aims and objectives of the project

Testing and Validation/Results

✓ Description of test cases

✓ Use of testing methods such as: unit (individual executable component) test, integration test, acceptance (user perspective) test

✓ Algorithm/ program / system tested and verified against intended aims and objectives of the project

Self-reflection

✓Evidence of the developed algorithm's usability and extensibility

✓Critical reflection of own work in terms of:

- the algorithm/ program / system achievements,

- limitation, and

- challenges

Quality of the Report

Verb in scientific report: Abstract

Abstract is the representational summary of each chapter

Therefore, verb in abstract follows section's verb

Verb in scientific report: Introduction

- When **stating a fact** that is widely accepted, the **present tense** is appropriate.
  - DNA is composed of four nucleotides

- When **referring to a previous study** with results that are still relevant, use the present perfect tense
  - Johnson *et al.* have shown that gene X is part of an operon

- When **referring specifically to the methods** used in a previous paper, the **past** tense is the best.
  - gene X was first cloned into a shuttle vector in 2003

- **Present tense** is used When a **referring specific result, figure, or paper** is the subject of a sentence
  - the results of their study indicate that the drug is highly effective. Figure 1 shows….

- **Statements that are no longer considered true** should remain in the **past tense**
  - early physicists thought that electrons travelled in defined orbits

Verb in scientific report: Method

- **The methods chapter should use the past tense** because it is a report of what was done during the course of the study.

  - cells were transfected, irradiated, and assayed for DNA damage

  - we adopted machine learning technique for gene classification

Verb in scientific report: Results

- the **results chapter** of a report is also largely **written using the past tense** since this chapter reports about what you have already achieved

    - all participants reported a significant reduction in pain
    - miss-classification rate was low for gene classification

Maths in Report

Euler's formula states that for any real number x:

$$e^{ix} = \cos x + i \sin x, \qquad\qquad (1)$$

where e is the base of the natural logarithm, i is the imaginary unit, and $\cos$ and $\sin$ are the trigonometric functions cosine and sine respectively, with the argument x given in radians

Euler's formula in Eq. (1) evaluates to $e^{ix} + 1 = 0$, which is known as Euler's identity

Maths in Report

defining variable

Colon preceding equation

equation number

Euler's formula states that for any real number x:

$$e^{ix} = \cos x + i \sin x,$$ (1)

immediate definition of variables

punctuation for equation

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in-text citation of equation

Maths in Report

1 defining variable

2 Colon preceding equation

3 equation number

Euler's formula states that for any real number x:

immediate definition of variables

5

$$e^{ix} = \cos x + i \sin x,$$

punctuation for equation

4

(1)

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6 in-text citation of equation

Tables

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A	B	C	D	E
K	32	58		
L		fd		
M		dg		
N		df		

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Tables

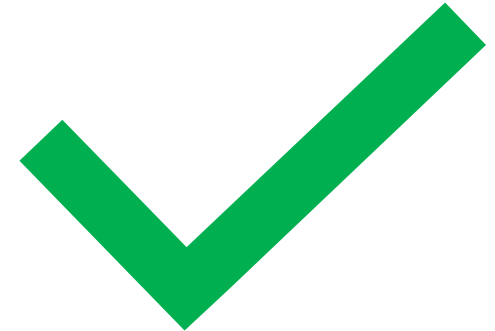Some text some text some text some text some text some text some text some text some text some text some text some text some text some text some text some text

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Tables

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Table 1: Datasets for classification problem

#	Inputs (X)		Class (Y)
	Length (cm)	Weight (kg)	Animal
Ex. 0	23.2	3.2	Cat
Ex. 1	70.9	19.5	Dog
Ex. 2	60.5	18.51	Dog
Ex. 3	24.5	4.6	Cat
Ex. 4	110.0	35.83	Dog
Ex. 5	23.8	3.7	Cat

In Table 1, we describe the dataset collected for classification problem. Table 1 shows two class cat and dog

Tables

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①

Table caption goes on top of table (Font is smaller than the body text)

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②

In –text citation answer have Capital later 'T' in word Table follows by number of table, **it takes present tense**

In Table 1, we describe the dataset collected for classification problem. Table 1 shows two class cat and dog

Figure

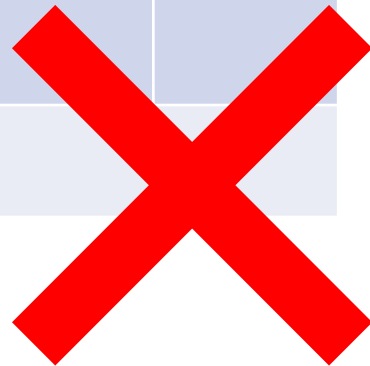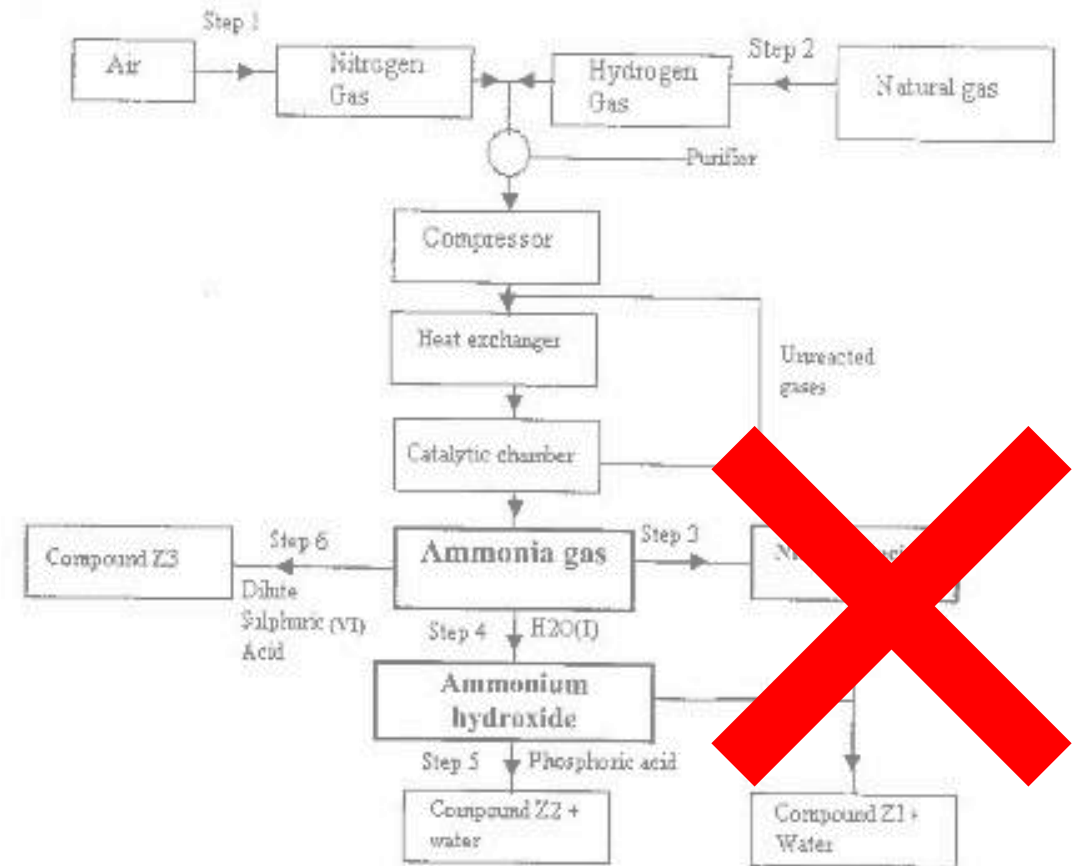| A	B	C	D	E
K	32	58		
L		fd		
M		dg		
N		df		

Table is **NOT** a Figure

Figure

Some text some text some text some text some text some text some text some text some text some text some text some text some text some text some text some text some text
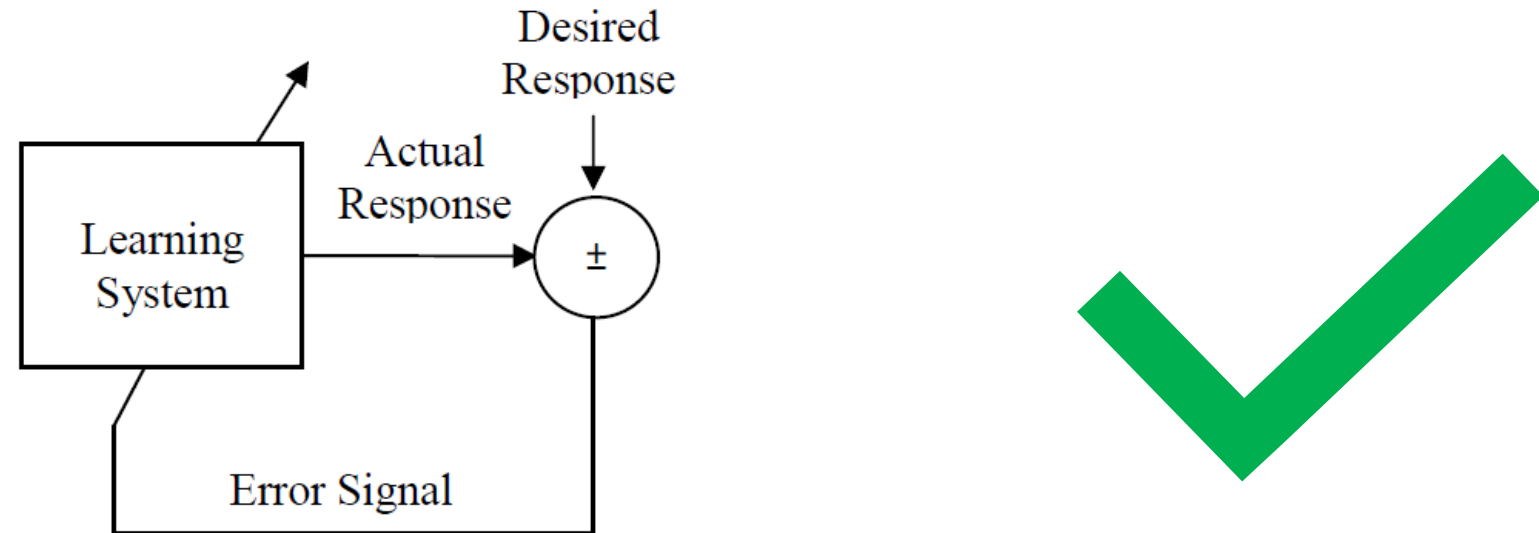

Figure 1: Supervised learning system; Symbol ∓ indicates error correction

In Figure 1, we describe the error correction system in a supervised learning system. Figure 1 indicates that a loop required for error correction while consulting actual response with desired response
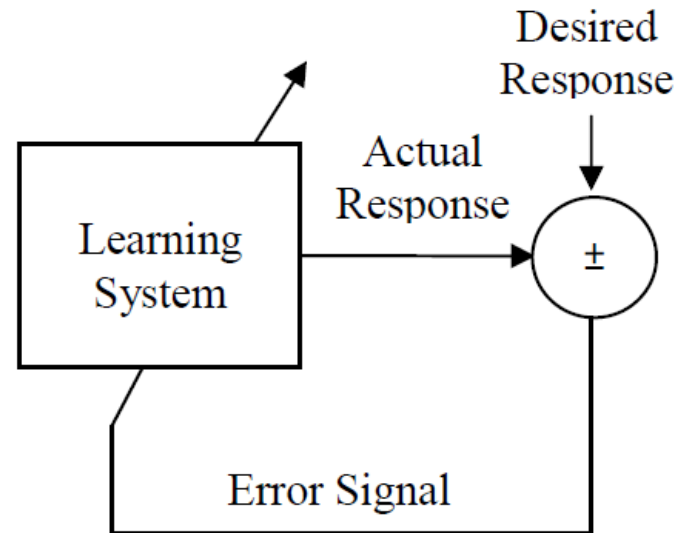
Figure

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Figure 1: Supervised learning system; Symbol ∓ indicates error correction

1

Figure caption goes on bottom of figure (Font is smaller than the body text)

2

In–text citation have Uppercase word "**Figure**" follows by number of figure, **it takes present tense**

In Figure 1, we describe the error correction system in a supervised learning system. Figure 1 indicates that a loop required for error correction while consulting actual response with desired response

Reference

- Reference is a list of information source such as books, journal article, conference paper, web portal URL, etc that have been cited in report.

- All information gathered from literature **must be cited** within the text of the report where it belong to, else report may be considered plagiarized.

- List of information source be arranged in uniform style

Reference

✓Reference style can be

✓APA (American Psychological Association) Style

✓Harvard Style

✓Simple numbering system

APA Style

Web page with author:

In-text citation

Role-play can help children learn techniques for coping with bullying (Kraiser, 2011).

Reference entry

Kraizer, S. (2011). Preventing bullying. Retrieved from http://safechild.org/categoryparents/preventing-bullying/ (Accessed on 27 October 2021)

Web page with no author:

In-text citation

The term Nittany Lion was coined by Penn State football player Joe Mason in 1904 ("All things Nittany," 2006).

Reference entry

All things Nittany. (2006). Retrieved from http://www.psu.edu/ur/about/nittanymascot.html (Accessed on 27 October 2021)

APA Style

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Heimans, R. (1996). Gloves Off (Tom Uren) [oil paint on canvas]. Canberra: National Portrait Gallery. Retrieved fromhttp://www.portrait.gov.au/portraits/2000.36/gloves-off-tom-ure

APA Style

Questions?