How to Report Your Lab?

September 19, 2022

Writing Lab Reports

Writing lab reports follows a straightforward and structured procedure. It is important to recognize that each part of a lab report is important, so take the time to complete each carefully. A lab report is broken down into eight sections: title, abstract, introduction, methods and materials, results, discussion, conclusion, and references[1].

[1] https://guides.libraries.indiana.edu/c.php?g=992698&p=7182653

Title

The title of the lab report should be descriptive of the experiment and reflect what the experiment analyzed.

- Ex: "Comparing the Image Interpolation Methods"

Abstract

- Abstracts are a summary of the experiment as a whole and should familiarize the reader with the purpose of the research.
- Abstracts will always be written last, even though they are the first paragraph of a lab report.
- Not all lab reports will require an abstract. However, they are often included in upper-level lab reports and should be studied carefully.
- When writing an abstract, try to answer these questions:
  - Why was the research done or experiment conducted?
  - What problem is being addressed?
  - What results were found?
  - What are the meaning of the results?
  - How is the problem better understood now than before, if at all?

Introduction

- The introduction of a lab report discusses the problem being studied and other theory that is relevant to understanding the findings.
- The hypothesis of the experiment and the motivation for the research are stated in this section.
- Write the introduction in your own words. Try not to copy from a lab manual or other guidelines. Instead, show comprehension of the experiment by briefly explaining the problem.

Methods and Materials

- The methods and materials section provides an overview of any equipment, apparatus, or other substances used in the experiment, as well as the steps taken during the experiment. If using any specific amounts of materials, make sure the amount is listed.
    - Ex: your chosen image, your programming language, your library
- List the steps taken as they actually happened during the experiment, not as they were supposed to happen.
- If written correctly, another researcher should be able to duplicate the experiment and get the same or very similar results.

Results

- The results show the data that was collected or found during the experiment.
- Explain in words the data that was collected.
- If using graphs, charts, or other figures, present them in the results section of the lab report.
    - Tables should be labeled numerically, as "Table 1", "Table 2", etc. Other figures should be labeled numerically as "Figure 1", "Figure 2", etc.
- Calculations to understand the data can also be presented in the results.

Discussion i

- The discussion section is one of the most important parts of the lab report. It analyzes the results of the experiment and is a discussion of the data.
- If any results are unexpected, explain why they are unexpected and how they did or did not effect the data obtained. Analyze the strengths and weaknesses of the design of the experiment and compare your results to other similar experiments.

Discussion ii

- If there are any experimental errors, analyze them.
- Explain your results and discuss them using relevant terms and theories.
- When writing a discussion, try to answer these questions:
  - What do the results indicate?
  - What is the significance of the results?
  - Are there any gaps in knowledge?
  - Are there any new questions that have been raised?

Conclusion

- The conclusion is a summation of the experiment. It should clearly and concisely state what was learned and its importance.
- If there is future work that needs to be done, it can be explained in the conclusion.

References

- If using any outside sources to support a claim or explain background information, those sources must be cited in the references section of the lab report.
- In the event that no outside sources are used, the references section may be left out.