

How to Read Research Paper in Computer Science

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Abstract—Researchers and graduate students spend lot of their time studying papers and face difficulties to extract required information from the content. This article mentioned some of the approaches that might helpful for reading research papers. Also the approaches will help you to skim though the papers so that you can skip the papers which might not be related to the research problem you are concerned.

I. INTRODUCTION

Researchers read paper for various reasons such as finding research problem in a research domain, get idea about how to solve a research problem or even get domain knowledge on a specific research area. Common approach of beginner is to read technical information and research data first. Of course technical and research data both are important, but we should keep track of other information such as the research context, approach of solving the problem, conclusion and future works etc. In the rest of the paper we will discuss about reading research papers specifically for computer science.

II. APPROACH OF READING PAPER

Reading research paper does not mean that read and understand the paper in a single step. Rather we can define reading paper with several steps such initial understanding, detail analysis, summarization and review.

A. Initial Understanding

During phase you should go through the paper very quickly to get the birds eye view about paper. In this phase you need not to get detail understanding of the research problem, solution methodology and other stuffs, rather main target is get overview of the paper. At the end of quick skim you should able to get idea about type of paper, the area of research problem such as Teleworking or Algorithm, and the problem that the paper expressed. This initial understanding phase should consists of following steps:

- Cautious reading of paper Title, Abstract, Key Words, Introduction.
- Read section and sub section title and also read image title.
- Read Conclusion and Future Goals.

After this phase following questions should visible to the reader. And according to [1] you should be able to answer the five Cs:

- Category: What type of paper is this? A measurement paper? An analysis of an existing system? A description of a research prototype?
- Context: Which other papers is it related to? Which theoretical bases were used to analyze the problem?
- Correctness: Do the assumptions appear to be valid?
- Contributions: What are the papers main contributions?
- Clarity: Is the paper well written?

With this information you can decide whether to read or not read the paper. This might be the case that this paper is not related to problem your are looking for or might not have the solution which you are looking for.

B. Detail Understanding

In this phase try to read the paper very carefully. Try to look detail about problem statement, problem analysis, approach to solve the problem and detail look into the data. Also consider whether authors claims are reasonable and realistic and do the authors present evidence about why they are this research?

Look carefully about the diagrams and graphs and perform close look at data. You should also look at references that in many cases irrelevant references are added to decorate the paper. After this phase you should be able to summarize the paper.

Sometimes even after completing this phase you might not understand the paper as you might be familiar with the subject matter or there may be the case that the paper is written poorly. In that case, according to [1]e you can now choose to: (a) set the paper aside, hoping you don't need to understand the material to be successful in your career, (b) return to the paper later, perhaps after reading background material or (c) persevere and go on to for analysis and understanding.

C. Review and Further Analysis

To understand the paper fully, you should review the paper again to analyze the assumptions that the author(s) made.

Apart from that you should also think about hidden failings and assumptions. If possible compare the works with other. At the end of this phase you should be able to rewrite the paper structure and also be able to identify strong and weak points.

III. PAPER REVIEW

A paper review is a short essay mentioning the findings about the research paper you read. As mentioned in [2] writing reviews for the papers you have read is a great way to sharpen your paper reading skills. In a Review report there can be three sections as a. Summary, b. Evaluation and c. Synthesis.

- Summary: It gives an overview in your own words about the research work. It may also be an elaborate abstract in your own words about the paper.
- Evaluation: In this part you should discuss about the strong and weakness about the research work. During evaluation you should consider about the context of the research work.
- Synthesis: Mention any interesting thoughts and findings about the research in your own words.

IV. CONCLUSION

Reading research paper is very important for researchers. It helps to get knowledge about the problem, how to solve the problem and in some cases give future direction of the research. And in some cases it also gives solution for our research problem. So, we should read research papers actively rather passively with the mentioned reading strategy.

REFERENCES

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