How to Write
Research Papers in Computer Science

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Abstract

This report tells all the process for writing a nice and worthy thesis paper,research paper or report.For publishing research papers in a well-known scientific magazines,that research papers must be well written.And this report says exactly that by using latex environment.One must follow the rules that have discussed here for writing a good research paper.

Contents

Chapter 1

Research in Computer Science and Engineering

In Computer Science and Engineering research is the starting step of inventing new revolution.No big job comes without research.But at the time of research one should follow some rules.Otherwise research may be lengthy or may not bring any good result.
Steps to follow:

- Study and explore your area of interest. computer science and engineering;

- Choose a research problem.

- Find one or two co-researchers and form a research group.

- Read related research papers published in good journals and conferences and present those papers in the group, by rotation.

- Sit frequently for brainstorming on the problem and try to find non-trivial results.

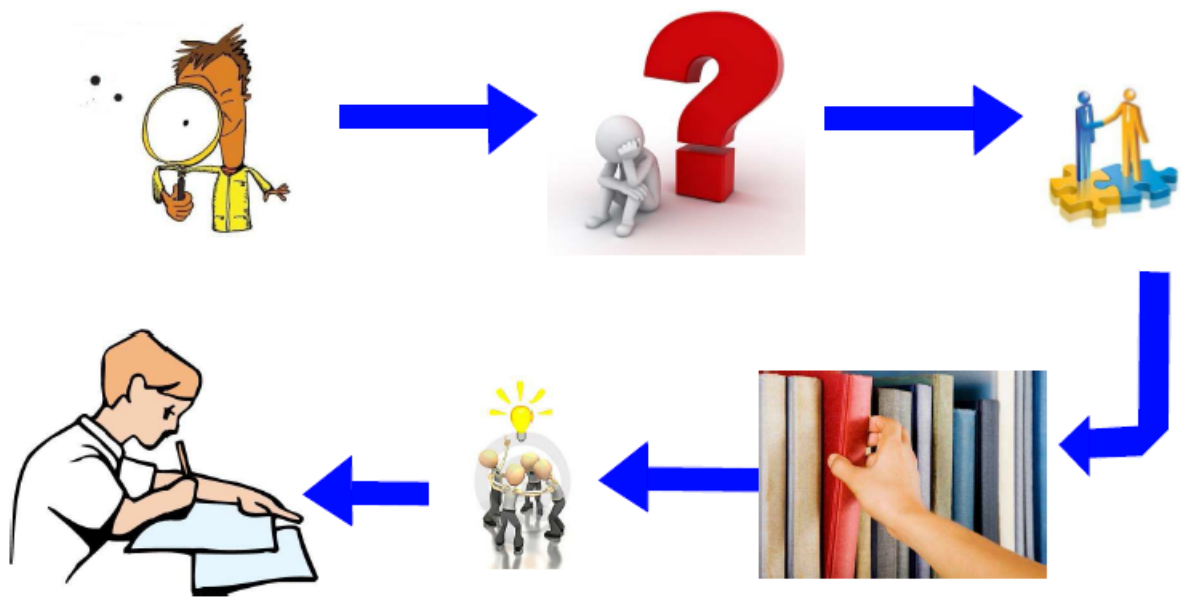- Find good results around the problem and write papers.

Figure 1.1: Steps to follow

Chapter 2

Writing a Paper

After research it is very important to write a good research paper.Howover writing a good research paper is not so easy.One should follow some important terms when writing a research paper.It includes various terms.These are illustrated below.

2.1   Organization of a Research Paper

It is the whole image of a good research paper.It includes all the terms that are strongly needed to write a good research paper.
Here are the terms:

1. Title

2. Author/Authors Name and Affiliation

3. Abstract and Key words

4. Introduction

5. Preliminaries / Background / Related Works

6. Main Results (may be several sections)

7. Conclusions

8. Acknowledgement

9. References

10. Appendix

2.2 Title of a Paper

It must contain the following terms:

1. The title should convey some information to the reader.

2. The title should tell the reader exactly what the paper is about and, further, what points it makes.

2.3 Authors Name

Name: At the beginning of your career, pick a name for yourself and stick to it.
Md. Saidur Rahman
M. S. Rahman
Md. S. Rahman

Wrong	Correct
Dr. Md. Saidur Rahman	Md. Saidur Rahman
Prof. Md. Saidur Rahman	Md. Saidur Rahman

2.4 Affiliation

Affiliation:
Organization, Postal Address and Email Address

Bad	Good
Professor	Dept. of Computer Science and Engineering
Dept. of CSE	BUET, Dhaka 1000
BUET, Dhaka 1000	Bangladesh

2.5 Abstract

Write the full paper in a concise form (at most ten lines.) It should contain

- **Motivation**: Why do we care about the problem and the results?

- **Problem statement**: What problem is the paper trying to solve and what is the scope of the work?

- **Approach**: What was done to solve the problem?

- **Results**: What is the answer to the problem?

- **Conclusions**: What implications does the answer imply?

General features of an abstract:

- self contained.

- should not make any bibliographic reference.

- should contain a minimum number of notations.

2.6   Key Words

The key words are provided so that

- editor can choose appropriate reviewer.

- archiving services can place your paper correctly into a database.

Bad Choice	Good Choice
New	Algorithm
Intersting	Sperating Triangle
Optimal	Matching

2.7   Introduction

Write the full paper in 2-3 pages. Most difficult part of a paper. This is the first section of a paper but the last section to complete.

** make general statements about the problem related subject and define the problem.

** bring out the importance of the problem from theoretical and application point of view.

** present an overview on the history and current research on the problem. Justify a research gap for your study.

** continue a tradition, or propose a completely new approach.

** sketch the intent of your own work and outline important characteristics and results of your own work.

** give an outline of the organization of the paper.

2.8   Organization of your paper

It is provided so that

- Plan your sections and subsections. Use a top-down writing method. Use a sentence to represent the points (paragraphs) in each subsections.

- Writing details: expand a sentence in the sketch into a paragraph.

- Keep a logical flow from section to section, paragraph to paragraph, and sentence to sentence.

2.9   Preliminaries

To make the paper self-contained

- Define the notations and definitions that will be used throughout the paper.

- Describe briefly the known methods that you will use in your method.

- State the known results as Lemmas that you will use for proving your result.

- Describe your preliminary results.

2.10   Main Results

It is very important to organize a good research paper.The research paper should be written in a way so that one can easily understand when writing it and doesn't get bored.
To make a paper good looking and attracting :

- Plan your sections and subsections to present your main results.

- Give short and informative section names.

- Give a brief outline at the beginning of each section.

- Give intuitive idea and outline of every proof and method, and then give the details.

- Keep a logical flow from section to section, paragraph to paragraph, and sentence to sentence.

2.11 Conclusions

It is an important part of writing a good research paper.In this section one should not elaborate his/her whole research paper rather should give a brief description about his/her research.
To make it standard follow :

- Restate your contribution.

- Mention any useful implication of your results that have not mentioned earlier.

- Mention future direction of research and interesting open problems that you have found in doing this research work.

2.12 Acknowledgement

It is also a very important part.When you start to write a paper you may need information from other sources.
So,

- Give thanks to anonymous reviewers and to persons who helped you in doing this work.

- Acknowledge grants or support that you have received for doing this work.

2.13 Bibliographic References

At the time of writing a paragraph you should mention the references or bibliographies from those you have taken help.
For these the following rules should be followed.

- Reference or Bibliography?
  References:List of sources that you actually cite in your paper.
  Bibliography: List of all related publications.

- Follow same style for all references.

- Each item in the list must have at least the following fields: Author(s), Title, Journal or Proceedings, Publisher, Page Numbers, Year.

- URLs do not have a publication date, hence say when accessed it last.

- Follow the style specified by the publisher.

2.14 Appendix

It is a part which may bring whole of your paper within a glance.

- Bring the materials from main chapters to Appendix which obstruct the flow and smoothness of the paper.

2.15 What To Do Once The Paper Is Written?

After writing a research paper you should revise this many times.Then you can submit it in a good journal or conference.But You must follow the rules of those journals/conferences at where you submit it.This process may be sometimes lengthy.You should follow the following rules until your research paper is not accepted by a good jounal.

- Revise the paper several times. How many times?

- Submit the paper to a conference/journal.

- Receive review report.

- Revise the paper according to reviewers comments and improve your results.

- Resubmit the revised version.

- Repeat the process until the paper is accepted.

- Send your source files to publishing house together with copyright transfer.

- Check the galley proof of the paper carefully when you receive it.

Chapter 3

Writing a Thesis

Writing a thesis paper is almost the same process of writing a rsearch paper.It includes Title page,table of contents,abstract list of figures etc.abstract should be one page.

3.1 Thesis Organization

This contains the terms of writing a thesis paper.
They are :

1. Title Page

2. Table of Contents

3. Abstract (One page)

4. List of Figures, List of Tables

5. Chapter 1:

    Introduction (5-10 pages).

6. Chapter 2:

    Preliminaries / Background / Related Works (8-20 pages).

7. Chapter 3-5:

    Main Contents. Each chapter contains a result in theoretical thesis. For applied/experimental area these chapters are on Modeling, Methodologies, Experimentation, Results and Discussions.

8. Chapter 6:

    Conclusions and Future Work (3-6 pages).

Chapter 4

Writing Tools

There are several writing tools for writing your research paper.You may use these tools when you write the research paper.It will make easy for you to write these and will give a good shape of your research paper.

1. LaTex: For typesetting of text.

2. LatexDraw: For drawing figures.

3. Xfig: For drawing figures.

 LaTex templates for submission to journals are available in journal web pages.
You can also find LaTex thesis templates in Internet.

Chapter 5

Plagiarism

When writing a research paper it is a great shy stealing ideas from others or copying other sources.It will make your research paper the worst one.You may loose honourity.This is strongly prohibited when writing a research paper.

5.1   What is Plagiarism

Here are the things :

1. Copying from other source.

2. Stealing others idea.

3. Never do it. It can spoil your career.

You may need to mention works of others, use method of others.
What will you do?

1. Read and understand the work.

2. Write in your own word (do not use verbatim copy)

3. Explain with your own illustrative figures

4. Give proper citation

Your own work/results should be significantly different from the cited work. You cannot use others works as the major content of your paper.

Chapter 6

Review Report and Revision Report

6.1 Review Report

Writing a review report is a professional duty. Usually it a voluntary work. A review report should contain

- Problem statement

- Contribution of the paper

- Strength and weakness of the paper

- Your recommendation

- Comments to author for improvement of the paper

6.2 Revision Report

A revision report should contain

- Thanks to the anonymous referees

- Your comments and action addressing each point raised by the reviewers.

Chapter 7

Concluding Remarks

You should always remember that publishing a good research paper is far better than publishing hundreds of poor papers.You should write quality research paper.
You should follow:

1. Always try to do quality research.

2. One good publication is better than dozens of poor publications.

3. You cannot regain your reputation by publishing 20 good publications if you damage your image by publishing only one bad paper.

4. Do not publish review/survey paper unless you are an expert of the field.

Publish your research results in good journals.
But do not publish a journal !!!!

Chapter 8

Acknowledgement

At last you should mention the sources you have used to fulfill your research paper.It is a very important part of research paper.You should follow like below :

- Sources:

  - D. E. Knuth, T. Larrabee and P. M. Robers, Mathematical Writing, MAA Notes, 14, The Mathematical Association of America, 1989.

  - S. G. Krantz, A primer of Mathematical Writing, American Mathematical Society, 1997.

  - R. Andonie and I. Dzitac, How to write a good paper in computer science and how will it be measured by ISI web of knowledge, Int. J. of Computers, Communications and Control, 4, pp. 432-446, 2010.

  - U. Khedker, How to Write a Good Paper? Indian Institute of Technology, Bombay (slides).

  - https://cs.uwaterloo.ca/ brecht/thesis-hints.html, accessed on August 29, 2013.