Technical Report Writing & Research Methodology

Proposal Writing

Course Instructor

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MSc Proposal

The proposal has the following components.

- Title
- Summary.
- Introduction.
- The Problem Statement.
- Aims and Objectives
- Scope/Significance of the Study
- Literature Review.
- Research Methodology.
- Expected Results and their Utilization.
- Experimental Setup/Equipment Required
- Budget and Feasibility
- Work Schedule/Plan
- References.

I. Title

- The title should be concise and informative.
- Must be inline with the actual project.
- Examples
  - Prognostic Maintenance of Jet Aircraft Using Data Analytics Techniques.
  - IOT based Waste Management System.
  - AI based Flood Monitoring System.
  - Detection and Classification of Citrus Fruit Disease through Image Processing.

2. Abstract/Summary

- Is a short summary of your project.
- Main purpose is to summarize the research, not to introduce the research area.
- Should include the research problem, the rationale for the study, the hypothesis, the methodology and the main findings of the project.
- Should not have any mathematical equations or references.
- Text should be in Times New Roman, font should be size 12 and line spacing should be 1.5 .

3. Introduction

- Introduction provides the background information for the work reported in the proposal.
- Provides the context for the project and sets the stage for the problem that you are trying to solve.
- Presents the rationale of the project and indicate why is it worth doing.
- In the introduction, you should use evidence (facts, figures, and works by other authors) to convince that your chosen research topic is
  - Relevant.
  - Not already over-researched.
  - Feasible (in terms of scope, resources and a time frame)

4. The Problem Statement

- Indicates the exact problem that you are trying to solve using the project.
- It expresses the words that will be used to keep the efforts focused throughout the project.
- Problem statement should be feasible (in terms of scope, resources and a time frame).

5. Aims and Objectives

- Aims and objectives are the foundation on which the entire project is constructed, so they need to be sturdy.
- No paragraphs are generally required.
- Write aims and objectives using brief and crisp bulleted/numbered statements.
- Make sure to include how the proposed research will be validated.

6. Scope/Significance of the Study

- Explain the benefits of the research in terms of novel contribution to the repository of knowledge that can be disseminated to the academic community and more broadly to address an important problem and its possible solution for a particular section of the community, such as industry.
- Answer the following questions:
  - Why is this study being undertaken?
  - What is the possible contribution of this study: scientific, policy, a program, practical contribution?

7. Literature Review

- The purpose of the literature review is to identify what past research has been carried out and how it links to your research problem.
- Should include publications of reputed conferences/journals.
- Indicate how your research relates to and extends the existing literature, showing that your research topic has not been undertaken. Be specific in selection of your research literature.
- Cite While You Write (CWYW).

Continued..

- References in literature review section should be in square brackets e.g.
  - Ali [1], for single author where Ali is his last name.
  - Ajmal and Afzal[2] for two authors with their last names separated by ‘and’.
  - If the number of authors are more than three, then use Gul et al. [3] where Gul is the last name of the first author.
- Use of any citation manager software will automatically accomplish the above formatting and auto generated references list.

8. Research Methodology

- What methods/techniques will you use to solve the problem in hand?
- For example
  - Selection of appropriate method.
  - Data collection and analysis techniques.
  - Tools/techniques to be used.
  - Data processing, analysis, interpretation techniques.

Continued..

- The proposed method(s) to be used for the study should be explained and justified i.e.
  - You need to explain how and why the method is appropriate for the study, and how it is feasible.
- Flow chart of how the methodology will be carried out. If possible, outline different phases of your study and how the completion of one phase leads logically into the next.

9. Expected Results and their Utilization.

- What are the possible results of your research work?
- How will these results be useful and what do you expect to contribute from presenting these results?
- Indicate how your study will address the aims and objectives of the project that you have identified in the previous sections. Express how your findings can be generalized.

10. Experimental Setup/Equipment Required

- How the equipment/software/experimental setup required will be arranged.
- For example, the required experimental setup is present in our university or some other organization's setup will be used or funding is required for acquiring equipment for the execution of the proposed research.

11. Budget and Feasibility

- Write about the expected costs of the proposed research.
- You may budget up to Rs. 30,000 for funding the research project from BOASAR.

12. Work Schedule/Plan

- Distribute your work in the available time of minimum one semester.
- Use a Gantt Chart to schedule/plan your activities.

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- Activity wise timeline for the project in the form of a Gantt Chart.

Work/Schedule Plan	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year
Literature Survey						
Experimental work						
Sample Testing						
Observation and calculation of Results						
Thesis writing						

13. References

- **Example Journal Paper:**

Waseem, M. Ajmal, and Kim T.-W., 2015. Development of a new composite drought index for multivariate drought assessment. Journal of Hydrology, 527: 30-37.

- **Example Conference Paper:**

Raja G. and Mirza M.J., 2004. Performance comparison of advanced video coding H.264 standard with baseline H.263 and H.263+ standards. In *Proc. 4th IEEE International Symposium on Communications & Information Technologies, ISCIT 04*, Sapporo, Japan, 743–746.

- **Example Book:**

Iain E.G.R., 2003. Video Codec Design, Great Britain, John Wiley & Sons ISBN: xx-yyyy-zzzz.

- **Example Web Link:**

MPEG Software Simulation Group,2004. The MSSG homepage, available on-line at http://www.mpeg.org/MPEG/MSSG.

Tables Format

- The Tables captions/titles should be above the table as shown below. The data in tables may not be a repetition of the Figures.

Table 3: SPI values for drought classification (Reference if any)

S. No.	Classification	SPI value
1	Extreme wet	≥ 2.00
2	Severe wet	1.50 to 1.99
3	Moderate wet	1.00 to 1.49
4	Mild wet	0.50 to 0.99
5	Normal	0.49 to −0.49

Figures Format

- Paste high resolution diagram in picture format with clear and readable labelling.
- The figures should not repeat the data or statistics available in the Tables.
- The figure caption/title as shown should be below the figure.

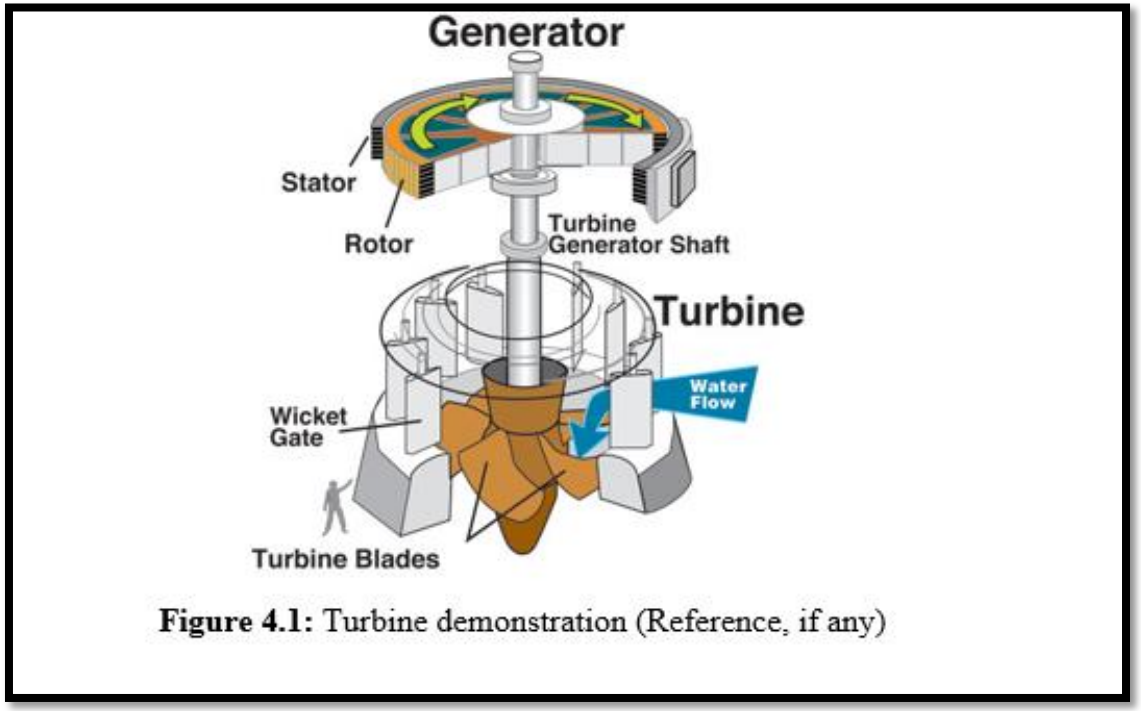

Figure 4.1: Turbine demonstration (Reference, if any)

Assignment

- Write your potential MSc Proposal in Latex.
- Submission deadline is two weeks from now.