

[Project Title]

[Your name]

Etc...

Abstract

Summarize the entire project in a single paragraph (150–250 words).

- Brief context of the problem
- Your motivation
- The proposed approach/methodology
- Expected outcomes or contributions
- Mention key datasets/tools if relevant

1. Introduction

Set the stage for your project.

- Background/context of the problem domain
- The broader impact of solving this problem
- Brief mention of challenges or open research questions
- End with a preview of the report structure

2. Problem Specification

Clearly define the problem you aim to solve.

- Formal statement of the problem
- Scope and boundaries of your work
- Any assumptions or constraints
- Describe whether it's classification, regression, clustering, etc.

3. Motivations

Explain why this problem matters.

- Real-world applications
- Academic/research significance
- Industry interest or gaps
- Any personal motivation is also welcome

4. Objectives

State your goals and what you plan to accomplish.

- Primary objective
- Secondary or supporting objectives
- Long-term impact if applicable

5. Literature Review

Summarize prior research relevant to your topic.

- Key papers, technologies, or approaches
- Strengths and limitations of existing work
- Comparison with your intended approach
- Use citations throughout (APA, IEEE, or your required style)

For example:

In paper [1], the authors proposed a convolutional neural network-based approach for image classification, achieving high accuracy on the CIFAR-10 dataset. However, their method lacked generalization when tested on real-world noisy data. In contrast, paper [2] introduced a hybrid model combining CNNs with attention mechanisms, which improved performance on complex visual tasks. While both approaches rely on deep learning architectures, paper [2] addressed the limitations of [1] by incorporating feature weighting strategies. Additionally, paper [3] explored transfer learning using pre-trained models like ResNet and showed promising results even with limited training data, suggesting a more data-efficient

alternative. These works collectively highlight the strengths of combining architectural innovation with data-efficient training, which informs the methodology proposed in this project.

6. Proposed Methodology

Describe your planned technical approach.

- Algorithms or models you intend to use (e.g., CNNs, transformers, reinforcement learning)
- Justify your choice of methodology
- Any preprocessing or feature engineering steps
- Tools, frameworks, or libraries you will use (e.g., PyTorch, TensorFlow)

7. Datasets Description

Detail the datasets you'll use.

- Source of the data (open-source, scraped, provided by industry, etc.)
- Size, format, features, and labels
- Any preprocessing or data cleaning steps planned
- Challenges like missing data, imbalance, etc.

8. Timeline of Second Semester Project (10 Weeks)

Break down your tasks week by week.

Week	Planned Activity
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Week 1	Finalize literature review, set up development environment
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Week 2	Data preprocessing and initial exploratory analysis
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Week 3	Implement baseline model
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Week 4	Evaluate and refine baseline
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Week Planned Activity

Week 5 Implement main model

Week 6 Fine-tune hyperparameters

Week 7 Evaluation and metrics collection

Week 8 Comparative analysis

Week 9 Write main report and prepare presentation

Week 10 Final review and submission

(Customize based on your project plan.)

9. References

List all the references cited in your report.

For example,

1. A. Krizhevsky, I. Sutskever, and G. E. Hinton, “ImageNet classification with deep convolutional neural networks,” *Adv. Neural Inf. Process. Syst.*, vol. 25, pp. 1097–1105, 2012.
2. A. Vaswani *et al.*, “Attention is all you need,” *Adv. Neural Inf. Process. Syst.*, vol. 30, pp. 5998–6008, 2017.
3. K. He, X. Zhang, S. Ren, and J. Sun, “Deep residual learning for image recognition,” in *Proc. IEEE Conf. Comput. Vis. Pattern Recognit.*, 2016, pp. 770–778.