



MS THESIS SYNOPSIS

THESIS TITLE

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1. Executive Summary

The Executive Summary (abstract) provides a concise overview of the proposed research project. This section is limited to one page and should include:

- A clear statement of the research problem and its significance [Identify the gaps and generate research objectives];
- The broad research aim/objectives [Hypothesis if needed]
- A brief description of the methodology design and approach [population and sampling technique, data collection procedure, data screening, ethical considerations]
- Expected outcomes and potential contributions to the field
- Any innovative aspects or unique features of the research

This summary should be written in a manner that is accessible to readers who may not be specialists in the field but need to understand the essence and importance of the research.

2. Project Description

2.1 Introduction and Motivation

- Provide background information on the research topic and its significance.
- Clearly state the research problem or objective that the thesis aims to address.
- Highlight the practical and/or theoretical importance of the research.
- Briefly mention relevant literature to build your argument (expanded in the literature review).
- Identify the research gap and explain the novelty of the proposed work.
- Present the main contributions and objectives of your thesis.

Note: This section should be limited to one page of text. Include a conceptual diagram to complement your narrative.

[Insert Conceptual Diagram Here]

Figure 1: Conceptual Overview of the Research Problem

2.2 Existing Research (Literature Review)

The literature review should provide a comprehensive overview of existing research relevant to your topic. Ensure you cite only credible and reliable sources. Add Proper references where needed Vehlou et al. [2013]. This section should:

- Summarize key research papers and studies related to your thesis topic.
- Provide an overview of the historical development and progression of the field.
- Identify gaps in the existing literature that your research aims to address.
- Analyze and compare different methodologies and approaches used in previous works.
- Discuss the strengths and weaknesses of each approach and their limitations.
- Highlight any inconsistencies or contradictions in the findings of different studies.
- Identify the most relevant and significant studies that have contributed to the field through tabular representation of systematic literature review.
- Discuss how your research builds upon and extends the findings of previous works.
- Consider the implications of the existing research for your own study and objectives.
- Justify the significance and relevance of your research in the context of the literature.

Note: Organize the literature review thematically or chronologically, as appropriate for your field. Use a critical approach rather than simply summarizing papers.

2.3 Problem Statement

This section should clearly articulate the specific research problem your thesis aims to address:

- Provide a clear, concise statement of the research problem.
- Elaborate on the technical aspects of the problem, connecting it to the gaps identified in the literature review.
- Frame specific research questions that guide your investigation.

2.3.1 Research Questions

1. RQ1: [First research question]
2. RQ2: [Second research question]
3. RQ3: [Third research question]

2.4 Research Gap Identification

Existing studies mainly address [**what is known**], but lack focus on [**specific gap or limitation**]. This study aims to address this gap by examining [**what this research investigates**].

2.5 Solution Statement and Research Objectives

- Existing studies mainly address [what is known], but lack focus on [specific gap or limitation]. This study aims to address this gap by examining [what this research investigates]”.
- Provide a comprehensive solution statement that addresses the identified problem.
- Outline the theoretical or conceptual framework guiding your research.

2.5.1 Research Objectives

- (a) To [first objective]
- (b) To [second objective]
- (c) To [third objective]
- (d) To [fourth objective]

3. Methodology

This section should provide a detailed description of your proposed research methodology [Design], highlighting how it will address the problems identified in the problem statement.

3.1 Materials: Data Collection and Preprocessing

3.1.1 Data Collection and ethical considerations

- Describe the sources of data (e.g., public datasets, surveys, experiments).
- Explain the data collection methods, including any tools or instruments [validity and reliability] used.
- Justify your sampling approach and sample size.
- Address any ethical considerations in data collection.

3.1.2 Data Labeling/procedure of data screening

- Describe how the data is labeled or annotated.
- Explain any quality control measures for labeling.
- Discuss inter-rater reliability if applicable.

3.1.3 Data Preprocessing

- Detail the steps taken to clean and preprocess the collected data.
- Explain data transformation or normalization procedures.
- Describe feature engineering or selection methods.
- Discuss how missing data and outliers are handled.

3.2 Methods

- Explain the overall design of the study (e.g., experimental, observational).
- Describe the novelty in your proposed approach.
- Articulate how your research activities would contribute to the body of knowledge.
- Provide a summary table on research objectives and how to achieve them through statistical techniques

[Insert Methodology Diagram Here]

Figure 2: Schematic Overview of Proposed Approach

3.2.1 Work Packages (WPs)

Work Package 1: [WP1 Title]

- Description: [Detailed description of WP1]
- Tasks:
 - (a) Task 1.1: [Description]
 - (b) Task 1.2: [Description]
- Milestones: [List of milestones for WP1]
- Deliverables: [List of deliverables for WP1]
- Duration: [Expected duration of WP1]

Work Package 2: [WP2 Title]

- Description: [Detailed description of WP2]
- Tasks:
 - (a) Task 2.1: [Description]
 - (b) Task 2.2: [Description]
- Milestones: [List of milestones for WP2]
- Deliverables: [List of deliverables for WP2]
- Duration: [Expected duration of WP2]

Work Package 3: [WP3 Title]

- Description: [Detailed description of WP3]
- Tasks:
 - (a) Task 3.1: [Description]
 - (b) Task 3.2: [Description]
- Milestones: [List of milestones for WP3]
- Deliverables: [List of deliverables for WP3]
- Duration: [Expected duration of WP3]

3.3 Model Architecture/Conceptual framework

- Present the architecture of any machine learning or statistical models used in the study.
- Explain the components and layers of the model and any hyperparameters chosen.
- Justify your model selection.
- Discuss any innovations or modifications to existing architectures.

[Insert Model Architecture Diagram/Conceptual framework Here]

Figure 3: Model Architecture/Conceptual framework

3.4 Justification of Selected Methodology

- Why the selected algorithm/model/framework is appropriate?
- Why at least two alternative approaches were not chosen?

3.5 Novelty of the Work

- Enlist the key contributions of the work (bullets)

3.6 Validation and Performance Metrics

- Minimum two baseline comparisons.
- Use of standard, domain-appropriate evaluation metrics.

4. Evaluation

4.1 Evaluation Metrics

- Specify the metrics used to evaluate the performance of the model or system.
- Explain how these metrics are calculated and interpreted.
- Justify the selection of these particular metrics.

4.2 Evaluation Methodology

- Describe the experimental setup (e.g., cross-validation, test-train split).
- Detail any statistical methods or tests applied to analyze the data.
- Explain the rationale behind the chosen statistical analysis approach.
- Discuss how you will ensure the validity and reliability of results.

4.3 Preliminary Results/Pilot testing

Present any preliminary results obtained during your Proof of Concept. This may include:

- Initial experimental findings
- Preliminary model performance
- Challenges encountered and potential solutions
- Insights gained that inform the full-scale implementation

[Insert Preliminary Results Figure/Table Here]

Figure/Table 4: Preliminary Results from Proof of Concept

4.4 Comparative Analysis

- Describe how you will compare your results with existing approaches.
- Outline the benchmarks and baselines you will use for comparison.

5. Implementation Timeline

5.1 Gantt Chart

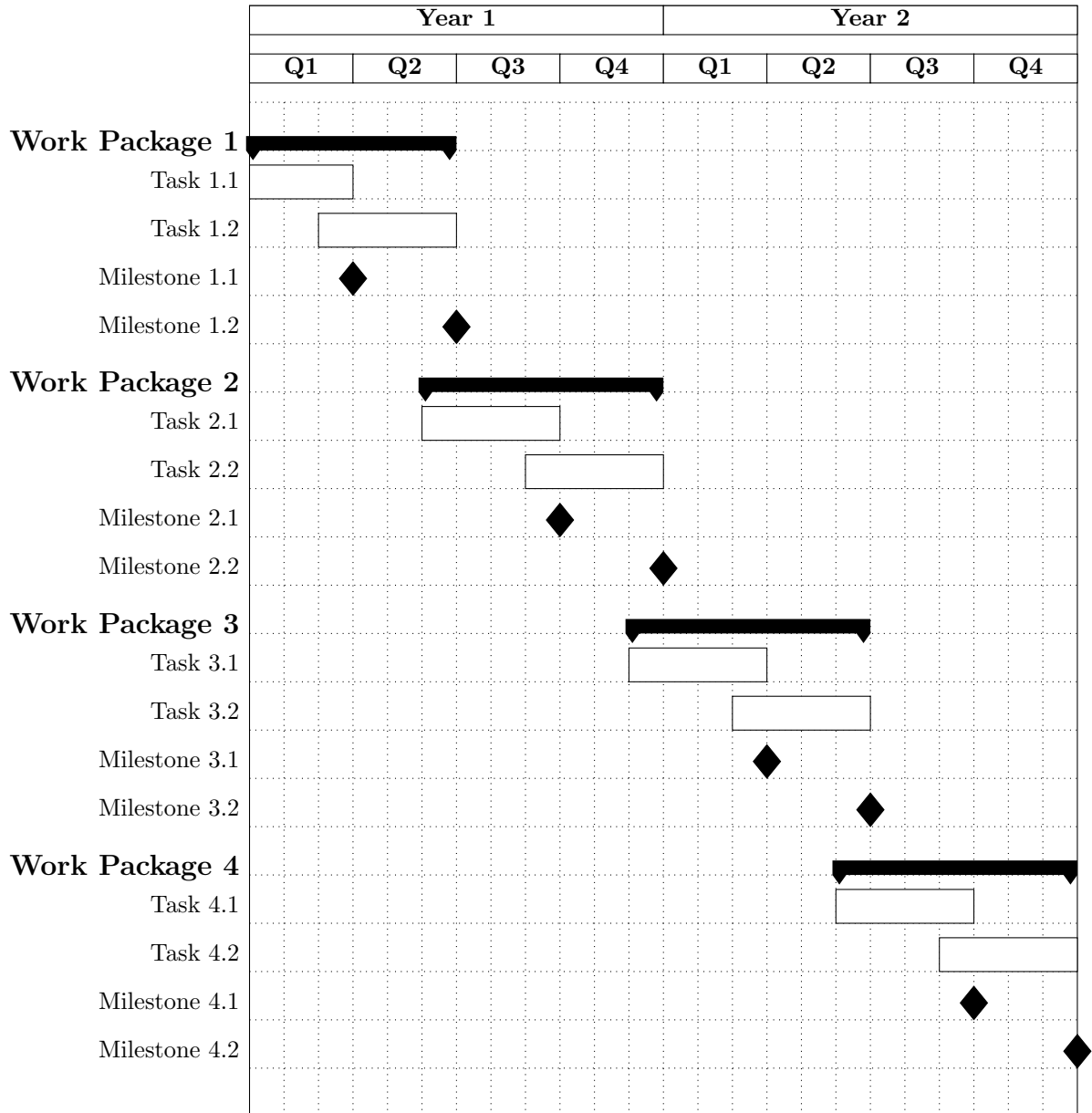


Figure 1: Gantt Chart for MS Thesis Implementation

You may import Gantt Chart as a figure, which is created in another package.

5.2 Major Tasks and Deliverables

Table 1: Major Tasks and Deliverables

Sr. No	Work Package	Description	Deliverable	Duration (months)
1	WP1	Task 1.1 description	Deliverable 1.1	3
2	WP1	Task 1.2 description	Deliverable 1.2	3
3	WP2	Task 2.1 description	Deliverable 2.1	3
4	WP2	Task 2.2 description	Deliverable 2.2	3
5	WP3	Task 3.1 description	Deliverable 3.1	3
6	WP3	Task 3.2 description	Deliverable 3.2	3
7	WP4	Task 4.1 description	Deliverable 4.1	3
8	WP4	Task 4.2 description	Deliverable 4.2	3

5.3 Plan for Dissemination

5.3.1 Target Conference

- **Conference Name:** [Name of the conference]
- **Submission Deadline:** [Date]
- **Conference Date:** [Date]
- **Location:** [Location]
- **Relevant Track/Theme:** [Track or theme name]
- **Planned Paper Title:** [Tentative title]

5.3.2 Target Journal

- **Journal Name:** [Name of the journal]
- **Impact Factor:** [Current impact factor]
- **Publisher:** [Publisher name]
- **Scope:** [Brief description of journal scope]
- **Planned Paper Title:** [Tentative title]

References

- C. Vehlow, T. Reinhardt, and D. Weiskopf. Visualizing fuzzy overlapping communities in networks. *IEEE Trans. Vis. Comput. Graph.*, 19:2486–2495, 2013.

Appendices

This is optional, You may remove it, if not needed.

Appendix A: List of Abbreviations

ML Machine Learning
DL Deep Learning
AI Artificial Intelligence
WP Work Package

Appendix B: Additional Materials

[Include any additional materials that support your synopsis but are not essential to the main text]