

## Chapter 1: INTRODUCTION TO PROJECT

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### 1.1 Background and Motivation

- 1.1.1 Context of AI in Nutrition
- 1.1.2 Need for Personalized Diet Recommendations

### 1.2 Problem Statement

- 1.2.1 Gaps in Existing Recipe Recommendation Systems
- 1.2.2 Objectives of NutriSense

### 1.3 Scope of the Project

- 1.3.1 Functional Scope
- 1.3.2 Non-functional Requirements

### 1.4 Organization of the Report

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## Chapter 2: BACKGROUND AND MOTIVATION

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### 2.1 Overview of Nutritional Recommendation Technologies

- 2.1.1 Rule-based Systems
- 2.1.2 Machine Learning Approaches

### 2.2 Advantages of Embedding-Based Methods

- 2.2.1 Semantic Similarity in Text Data
- 2.2.2 Scalability and Flexibility

### 2.3 Drawbacks of Earlier Techniques

- 2.3.1 Lack of Personalization
  - 2.3.2 Computational Overheads
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## Chapter 3: LITERATURE SURVEY

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### 3.1 Early Recipe Recommendation Systems

- 3.1.1 Collaborative Filtering Methods
- 3.1.2 Content-Based Filtering Methods

### 3.2 Deep Learning and NLP in Food Tech

- 3.2.1 Word2Vec and Transformer Models
- 3.2.2 Sentence Transformers in Recommendation

### 3.3 Comparative Analysis of Key Studies

- 3.3.1 Study A: Model & Results
  - 3.3.2 Study B: Model & Results
  - 3.3.3 Summary Table of Findings
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## Chapter 4: PROJECT WORK

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#### 4.1 System Architecture

- 4.1.1 High-Level Block Diagram
- 4.1.2 Component Descriptions

#### 4.2 Data Collection & Preprocessing

- 4.2.1 Recipe Data Sources
- 4.2.2 Cleaning and Normalization Steps

#### 4.3 Embedding Generation

- 4.3.1 Model Selection ( all-MiniLM-L6-v2 )
- 4.3.2 Embedding Workflow

#### 4.4 Recommendation Pipeline

- 4.4.1 User Input Handling (Must-Have, Nice-To-Have, Excluded)
- 4.4.2 Similarity Computation (Cosine Similarity)
- 4.4.3 Filtering & Ranking

#### 4.5 User Interface & Interaction

- 4.5.1 Landing Page & Navigation
- 4.5.2 Profile & Preferences Module
- 4.5.3 Sample Recommendation Screens

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## Chapter 5: RESULTS AND DISCUSSIONS

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#### 5.1 Experimental Setup

- 5.1.1 Test Dataset Description
- 5.1.2 Evaluation Metrics

#### 5.2 Quantitative Results

- 5.2.1 Similarity Score Distribution
- 5.2.2 Precision, Recall, F1-Score

#### 5.3 Qualitative Analysis

- 5.3.1 Example Recommendations
- 5.3.2 User Feedback Summary

#### 5.4 Comparative Discussion

- 5.4.1 Against Baseline Methods
- 5.4.2 Strengths and Limitations

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## Chapter 6: CONCLUSION AND FUTURE SCOPE

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#### 6.1 Conclusions

- 6.1.1 Key Findings ( $\leq 1$  page)

#### 6.2 Future Scope

- 6.2.1 Potential Feature Enhancements
- 6.2.2 Scaling and Deployment Considerations

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## References

*(Use your chosen style: IEEE / APA / etc.)*

## **Appendix**

- A. Source Code Listings
  - B. Additional Figures or Tables
  - C. User Manual Excerpts
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