**CONTENTS**

|  |  |
| --- | --- |
| **ACKNOWLEDGEMENT**  **CERTIFICATE**  **ABSTRACT**  **CHAPTER 1**  **Introduction**  **1.1 Background**  **1.2 Statement of this problem**  **1.3 Applications**  **1.4 Objectives**  **1.5 Scope and Limitations**  **1.6 Organization of thesis**  **Conclusion**  **CHAPTER 2**  **Natural Language Processing**  **Introduction**  **2.1 Introduce to Natural Language**  **2.2 Processing of Natural Language in Machine**  **2.3 Parts-of-Speech Tagging**  **2.4 Chunking**  **2.5 Name Entity Recognition**  **2.6 Semantic Role Labeling**  **Conclusion**  **v**  **CHAPTER 3**  **Parsing Techniques**  **Introduction**  **3.1 Syntactic Parsing**  **3.1.1 Top-Down Parsing**  **3.1.2 Bottom-Up Parsing**  **3.2 Semantic Parsing**  **3.2.1 Lambda Calculus Parsing**  **3.2.2 Knowledge Bases for Semantic Parsing**  **Conclusion**  **CHAPTER 4**  **QA Techniques**  **Introduction**  **4.1 A Brief Overview of QA systems**  **4.2 Answer Extraction by Structural Information Matching**  **4.2.1 Identifying useful information for extracting answers**  **4.2.1 Structural Information Extraction and Representation**  **4.2.2 Models for combining multiple sources of information in**  **answer scoring**  **4.3 NLP-based Problem Solving (Todai-robot Project)**  **4.4 Dynamic Memory Networks (DMN) for NLP**  **4.5 DMN for Visual and Textual Question Answering**  **4.6 Query-Regression Networks**  **Conclusion**  **vi**  **CHAPTER 5**  **Implementation**  **Introduction**  **5.1 Overview of System**  **5.2 Input Structure and Feature Extraction**  **5.2.1 Parse the input text**  **5.2.2 Finding dependency structure from the text**  **5.2.3 Store the features in database**  **5.3 Question Analysis & feature extraction**  **5.3.1 Parse the question**  **5.4 Answering Module**  **5.4.1 W/H Question Answering**  **5.4.2 YES/NO Question Answering**  **Conclusion**  **CHAPTER 6**  **Experimental Results**  **Introduction**  **6.1 Experimental Datasets**  **6.2 Working Environment**  **6.3 Parsing Accuracy**  **6.4 Question Answering Results**  **6.5 Result Analysis**  **Conclusion**  **vii**  **CHAPTER 7**  **Conclusions**  **7.1 Summary of our work**  **7.2 Future Work**  **Conclusion**  **REFERENCES** | **ii**  **iii**  **iv**  **1**  **2**  **2**  **3**  **3**  **4**  **4**  **5**  **5**  **6**  **7**  **11**  **12**  **13**  **14**  **15**  **16**  **16**  **18**  **19**  **19**  **24**  **25**  **26**  **26**  **27**  **27**  **28**  **29**  **29**  **31**  **34**  **37**  **37**  **38**  **38**  **39**  **40**  **41**  **43**  **45**  **45**  **48**  **48**  **53**  **54**  **55**  **55**  **55**  **55**  **56**  **57**  **57**  **58**  **58**  **59**  **60** |

**viii**