

Final Year Project Report

Project Name

English to Pakistan sign language - machine translation



Project Advisor:

Nabeel Sabir Khan Bloch

Submitted By:

TayyabaZainab 12003065137

Abdul Rehman 12003065317

Session

2012-2016

University of Management and Technology

C-II Johar Town Lahore Pakistan

Final Year Project Report

Dedication

We commit our work to the hard of hearing group everywhere throughout the globe with the goal that they get to be equivalent to ordinary people. In this exploration work we are principally worried with taking care of day by day life correspondence issues confronted by listening to hindered people. We are doing this venture as a serving to humankind and hard of hearing group as Sadqa-e-Jaaria.

Final Year Project Report

Final Approval

Panel of Examiners

1) **Head of Department**

Department of Computer Science
UMT Lahore

2) **Advisor**

Department of Computer Science
UMT Lahore

3) **Co-Advisor**

Department of Computer Science
UMT Lahore

Final Year Project Report

Acknowledgment

We want to express our most deep gratefulness to every one of the individuals who gave us the likelihood to finish this report. A special appreciation we provide for our Final Year Project Advisor, **Nabeel Sabir Khan Bloch**, whose inspiring manner, spectacular course, steady backing, unmistakable interest, valuable co-operation, and liberal perspective has encouraged us to finish “English to Pakistan sign language - machine translation” project.

We also want to express our appreciation to our Co-Adviser **Dr. Adnan Shahzad** for the valuable remarks, comments and engagement through the learning procedure of this undertaking, furthermore for the encouragement for completing our project and thesis. Additionally, we want to thank the members in our study, who have energetically shared their valuable time during the way toward meeting. Last yet not the slightest we might want to thank my friends and family, who have bolstered me all through whole process.

Final Year Project Report

Abstract

In this thesis a Text to Pakistan Sign Language Automation System has been proposed. To conquer any hindrance between deaf and an ordinary individual, we need to think of a framework which can make an interpretation of one dialect to another. Till now interpreters were doing this work for us however now we are going to mechanize it as a result of constrained assets. Keeping in perspective the difference of sentence structure, there is a need to study Pakistan Sign Language's sentence structure with the goal that we could make an interpretation of as per the PSL linguistic use. Without linguistic use, sentences can't pass on their appropriate implications. In the wake of archiving the punctuation we now need to mechanize the capacity of changing over English sentence into its Pakistan Sign Language proportional sentence. For this we have proposed a system which takes an English sentence as an input and will produce its comparable Pakistan Sign Language's sentence. Our proposed framework uses a few tools which parse the offered sentence to give English language lexicons along with their parts of speech and dependency tags, in the form of a tree. The yielded tree, alongside our documented sentence structure is passed to our proposed parser which then change the given tree hubs in light of those linguistic use rules. Last but not the least a PSL sentence is created from the modified tree.

Final Year Project Report

✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
✓	Error! Bookmark not defined.
Proposed Methodology: Part1.....	Error! Bookmark not defined.
Overview of the Proposed System.....	Error! Bookmark not defined.
Data Gathering.....	Error! Bookmark not defined.
Deduced Observation:.....	Error! Bookmark not defined.
Our Proposed Grammar for PSL.....	Error! Bookmark not defined.
Proposed Methodology: Part2.....	Error! Bookmark not defined.
Grammar Processing of a Natural Language	Error! Bookmark not defined.
Analysis of English Language Grammar	Error! Bookmark not defined.
Getting Output from Natural Language Parser.....	Error! Bookmark not defined.
Saving Grammar Information in a Tree Data-Structure.....	Error! Bookmark not defined.
Getting Word Dependencies from Typed Dependencies Tool	Error! Bookmark not defined.
Annotated Tree	Error! Bookmark not defined.
Tense Identification	Error! Bookmark not defined.
Sentence Structure Identification	Error! Bookmark not defined.
Algorithm for Structure Type Identification	Error! Bookmark not defined.
Translation of Compound, Complex and Complex Compound Sentences.....	Error! Bookmark not defined.
Renaming of English Tree according to PSL Grammar.....	Error! Bookmark not defined.
Construction of PSL Tree.....	Error! Bookmark not defined.
Translated Sentence	Error! Bookmark not defined.
Evaluation	Error! Bookmark not defined.
Appendix A: Penn Treebank II Tags.....	Error! Bookmark not defined.

Final Year Project Report

Contents:	Error! Bookmark not defined.
Bracket Labels	Error! Bookmark not defined.
Clause Level	Error! Bookmark not defined.
Phrase Level	Error! Bookmark not defined.
Word level	Error! Bookmark not defined.
Function tags	Error! Bookmark not defined.
Form/function discrepancies	Error! Bookmark not defined.
Grammatical role	Error! Bookmark not defined.
Adverbials	Error! Bookmark not defined.
Miscellaneous	Error! Bookmark not defined.
Appendix B: How to write rules in rules file	Error! Bookmark not defined.
Grammar Rules Format.....	Error! Bookmark not defined.
Appendix C: Sentence level Test Results	Error! Bookmark not defined.
Appendix D: Paragraph level Test Results	Error! Bookmark not defined.

Final Year Project Report

List of Figures

Figure 1: Over View of Proposed System	Error! Bookmark not defined.
Figure 2: Stanford Parser Output	Error! Bookmark not defined.
Figure 3: Updating in Stanford Tree	Error! Bookmark not defined.
Figure 4: PSL Equivalent Sentence	Error! Bookmark not defined.
Figure 5: Machine Translation Architecture	Error! Bookmark not defined.
Figure 6: English and Chinese Equivalent Sentence.....	Error! Bookmark not defined.
Figure 7: English and PSL Equivalent Sentence.....	Error! Bookmark not defined.
Figure 8: Types of English Sentences in Terms of Structure.....	Error! Bookmark not defined.
Figure 9: Types of English Sentences in Terms of Function	Error! Bookmark not defined.
Figure 10: Types of English Sentences in Terms of Tense.....	Error! Bookmark not defined.
Figure 11: TESSA Proposed System.....	Error! Bookmark not defined.
Figure 12: Major Components of English to ASL by Grieve-Smith.....	Error! Bookmark not defined.
Figure 13: Proposed System of English to ISL.....	Error! Bookmark not defined.
Figure 14: Pros and Cons of deferent translation systems	Error! Bookmark not defined.
Figure 15: Proposed System	Error! Bookmark not defined.
Figure 16: PSL structure	Error! Bookmark not defined.
Figure 17: English Sentence Categories We Catered	Error! Bookmark not defined.
Figure 18: bar chart for followed word-order in Pakistan	Error! Bookmark not defined.
Figure 19: English and its equivalent PSL sentence	Error! Bookmark not defined.
Figure 20: English Tree constructed from NLP Output	Error! Bookmark not defined.
Figure 21: Dependency Graph	Error! Bookmark not defined.
Figure 22: Input Tree.....	Error! Bookmark not defined.
Figure 23: Output Tree (Annotated)	Error! Bookmark not defined.
Figure 24: Parsing of a Compound Sentence.....	Error! Bookmark not defined.
Figure 25: Parsing of a Compound Sentence	Error! Bookmark not defined.
Figure 26: Input English Tree	Error! Bookmark not defined.
Figure 27: Output renamed English Tree.....	Error! Bookmark not defined.
Figure 28: Evaluation	Error! Bookmark not defined.

Chapter1
Introduction

Background

A language is mod of communication among human beings. There exists numerous languages for human being to interact with each other. These languages can be written or spoken but among these languages, there is a special kind of language which is neither written nor spoken. This is known as Sign Language. It is a visual language which means it is gestured language, it uses signs and gestures to communicate. Pakistan, with the population of 130.58 million, suffers from about 2.49% of disability out of which 7.40% are impaired of hearing. According to World Health Organization the commonness of disability is 10% which makes Pakistan seem as if they have very fewer people suffering from any kind of disability but in fact most of the parents deny the presence of disability among their children or conceal the fact that their children are disabled.