



A Thesis Report

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The Department of Computer Science and Engineering, Metropolitan University, Sylhet in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering.

ON

Intent Detection in Bangla Dataset for the Food Domain using BERT and Machine Learning Techniques

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Declaration

We are declaring that this thesis is our original work and we have written it completely
By ourselves. We acknowledge all the sources of information which has been used in this
Thesis duly. Previously the thesis has not been submitted for any degree in any University.

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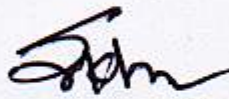


Recommendation Letter from Thesis Supervisor

The thesis entitled “**Intent Detection in Bangla Dataset for the Food Domain using BERT and Machine Learning Techniques**” submitted by the students:

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Is a record of research work carried out under my supervision and I, hereby, approve that the report be submitted in partial fulfillment of the requirements for the award of their Bachelor's Degrees.


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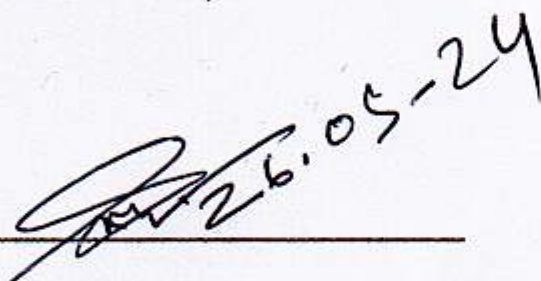
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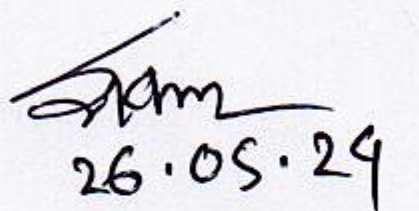
The undersigned hereby certify that they have read and recommended to the controller of examination for acceptance of the project entitled- **"Intent Detection in Bangla Dataset for the Food Domain using BERT and Machine Learning Techniques"** by **Badar Uddin Ahmad Ridoy and Dibbyasree Dey Mumu**. It has been defended in front of the following members of the project committee in 2024. The members have accepted this project as the partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Engineering.


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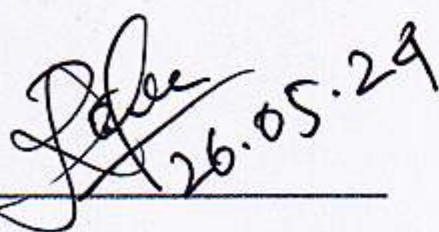
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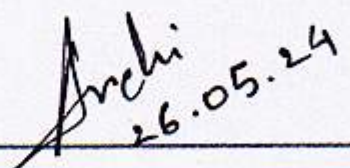

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Abstract

Natural Language Processing (NLP) is pivotal in today's digital world, with Natural Language Understanding (NLU) gaining popularity for its cognitive and AI applications. Spoken Language Understanding (SLU) is crucial for goal-oriented dialogue systems, involving word recognition and intent detection. Although SLU research has advanced rapidly, intent detection in low-resource languages like Bangla remains underexplored. This paper addresses this gap by introducing a benchmark dataset for intent detection in the Bangla language within the food domain. The dataset comprises approximately 4,539 user comments from Facebook and YouTube. We meticulously processed the raw text data through cleaning, filtering, and preprocessing to facilitate intent extraction. We utilized several models, including BERT (Bidirectional Encoder Representations from Transformers) and traditional machine learning models like Support Vector Machine (SVM) and Logistic Regression. The test accuracies achieved were 98.02% for BERT, 98.67% for SVM, and 97.68% for Logistic Regression. This thesis presents a robust solution for intent detection in Bangla, contributing significantly to the field by leveraging Transformer-based architecture and machine learning techniques. The creation of this dataset aims to promote further research in Bangla intent detection.

Keywords: Natural Language Processing (NLP), Spoken Language understanding (SLU), Intent Detection, Slot Filling, Food Domain, Machine Learning, Bangla Dataset.



Contents

Acknowledgement	I
Abstract	II
Table of Contents	III
List of Tables	IV
List of Figures	V
1. Introduction	1
1.1 Introduction	1
1.2 Motivation	3
1.3 Objective	4
2. Related Work	5
3. Methodology	7
3.1 Dataset Description	8
3.1.1 Dataset Collection	8
3.1.2 Data Cleaning.....	12
3.1.3 Dataset Annotation.....	13
3.1.4 Dataset Overview.....	15
4. Model Selection.....	17
4.1 Bidirectional Encoder Representations from Transformers.....	17
4.1.1 BERT Architecture	19
4.2 Support Vector Machine (SVM).....	20
4.3 Logistic Regression Model.....	21



5. Result and Analysis.	22
5.1 Training Model	22
5.2 Analysis of Each Model	23
5.2.1 Analysis of BERT model	23
5.2.2 Analysis of SVM model	24
5.2.3 Analysis of Logistic Regression model	26
6. Limitations	28
7. Future Work	29
8. Conclusion	30
References	31

List of Tables

3.1 Data Cleaning	12
3.2 Dataset Preview.	15
4.1 Models.	17
5.1 Performance metrics evaluation models	22



List of Figures

3.1 Implementation procedure	7
3.2 Get Video Id.	8
3.3 Open Apps Script	9
3.4 Wrote The Script	10
3.5 API V3 Adding	11
3.6 Annotation Steps	13
3.7 Dataset Overview.	16
4.1 BERT Model Structure	18
4.2 BERT Architecture	19
4.3 SVM Model Structure	20
4.4 Logistic Regression Model Structure	21
5.1 During Training Accuracy and Loss in Each Epoch.	23
5.2 Loss graph of BERT Model.	23
5.3 Accuracy graph of SVM Model	24
5.4 Loss graph of SVM Model.	25
5.5 Confusion Matrix of SVM Model.	25
5.6 Accuracy graph of Logistic Regression Model.	26
5.7 Loss graph of Logistic Regression Model	27
5.8 Confusion Matrix of Logistic Regression Model.	27

