

**PES UNIVERSITY**

(Established under Karnataka Act No. 16 of 2013)

100-ft Ring Road, Bengaluru – 560 085, Karnataka, India

***6th Semester Project Report on***

**Context Analyzer**

*Submitted by*

**Harsha K Y (PES1201801839)**

**Jan – May, 2020**

**under the guidance of**

**Mr. Tamal Dey**

Assistant Professor

Department of Computer Applications

PES University, Bengaluru - 560085

**FACULTY OF ENGINEERING**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**PROGRAM – MASTER OF COMPUTER APPLICATIONS**



**FACULTY OF ENGINEERING**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**PROGRAM – MASTER OF COMPUTER APPLICATIONS**

**CERTIFICATE**

*This is to certify that the project entitled*

**Context Analyzer**

*is a bona fide work carried out by*

**Harsha K Y (PES1201801839)**

in partial fulfilment for the completion of 6th semester project work in the Program of Study MCA with specialization in Data Science under rules and regulations of PES University, Bengaluru during the period Jan. 2020 – May 2020. The project report has been approved as it satisfies the 6th semester academic requirements in respect of project work.

**Internal Guide**

**Mr. Tamal Dey, Assistant Professor**

Department of Computer Applications

PES University, Bengaluru – 560085.

***Chairperson***

Dr. Veena S

Department of Computer Applications

PES University, Bengaluru – 560085.

***Dean-Faculty of Engineering Technology***

Dr. Keshavan B K

PES University, Bengaluru – 560085.

***Name and Signature of Examiners:***

*Examiner 1:**Examiner 2:**Examiner 3:*

**DECLARATION**

I, **Harsha K Y**, hereby declare that the project entitled, **Context Analyzer***,* is an original work done by us under the guidance of **Mr. Tamal Dey**, Assistant Professor, Department of Computer Applications, PES University and is being submitted in partial fulfilment of the requirements for completion of 6th Semester course work in the Program of Study **MCA**. All corrections/suggestions indicated for internal assessment have been incorporated in the report. The plagiarism check has been done for the report and is below the given threshold.

**PLACE:** Bengaluru

**DATE:**

**HARSHA K Y**

PES1201801839

**ACKNOWLEDGEMENT**

The satisfaction and euphoria are that successful completion of any task would be incomplete without mentioning the people who made it possible.

I would like to express my deep sense of gratitude to respected Vice Chancellor of PES University**, Dr. Suryaprasad K**, for giving the opportunity to work on this project.

I take this occasion to thank my sincere and heartfelt thanks to Dean, Faculty of Engineering and Technology,  **PES University** **Dr. Keshavan B K** and Chairperson, Department of Computer Applications,  **PES University** **Dr. Veena S** for their motivation, support and for providing a suitable working environment.

With a great pleasure, I express my sincere gratitude to my guide **Mr. Tamal Dey, Assistant Professor, Department of Computer Applications**, **PES University** for providing me with right guidance and advice at the crucial junctures which helped me in completing the project work on time. I am whole-heartedly thankful to him for giving me valuable time, suggestions and for showing me the right way in completing my project successfully.

I extend my sincere thanks to our project **coordinator Mr Tamal Dey, Assistant Professor, Department of Computer Applications,** for providing schedule and timelines and documenting information about project.

I also thank other faculty members and friends at this occasion.

**CONTENTS**

1. **INTRODUCTION**  1

1.1. PROJECT DESCRIPTION  2

1. **LITERATURE SURVEY**

2.1 BACKGROUND STUDY  5

2.2 FEASIBILITY STUDY8

2.3 TOOLS AND TECHNOLOGIES 9

1. **HARDWARE AND SOFTWARE REQUIREMENTS**

3.1 HARDWARE REQUIREMENTS 11

3.2 SOFTWARE REQUIREMENTS  11

1. **SOFTARE REQUIREMENTS SPECIFICATION**

4.1 USERS 12

4.2 FUNCTIONAL REQUIREMENTS 12

4.3 NON – FUNCTIONAL REQUIREMENTS 15

1. **SYSTEM DESIGN**

5.1 FLOW DIAGRAM 16

5.2 DETAILED METHODOLOGY 18

1. **IMPLEMENTATION**

6.1 SAMPLE SOURCE CODE AND DESCRIPTION 24

6.2 SCREENSHOTS 30

1. **SOFTWARE TESTING**

7.1 TEST CASES 37

1. **CONCLUSION**  41
2. **FUTURE ENHANCEMENT**  42

**APPENDIX A: BIBLIOGRAPHY** 43

**APPENDIX B: USER MANUAL**  44

**LIST OF FIGURES**

**Page No.**

1. **Figure 5.1 – Flow diagram, ML View 16**
2. **Figure 5.2 – Flow diagram, Web-application View 17**
3. **Figure 5.3 – LSTM 20**
4. **Figure 5.4 – Architecture of Sentiment Analysis Model 21**
5. **Figure 5.5 – Architecture of Multi-class Classification Model 22**
6. **Figure 5.6 – Architecture of Spam Detection Model 23**
7. **Figure 6.1 – Server.js setup 24**
8. **Figure 6.2 – Server.js routes 25**
9. **Figure 6.3 – sentimentAPI.js 26**
10. **Figure 6.4 – Home Page 30**
11. **Figure 6.5 – Sentiment Analysis 31**
12. **Figure 6.6 – Category Prediction 32**
13. **Figure 6.7 – Spam Detection 33**
14. **Figure 6.8 – API Documentation 34**
15. **Figure 6.9 – Sentiment Response 35**
16. **Figure 6.10 – Category Response 35**
17. **Figure 6.11 – Spam Response 36**

**LIST OF TABLES**

**Page No.**

1. **Table 7.1 – Test case T001 37**
2. **Table 7.2 – Test case T002 38**
3. **Table 7.3 – Test case T003 39**
4. **Table 7.4 – Test case T004 40**

**ABSTRACT**

Text classification is an important task in supervised machine learning. A piece of text is assigned to one or more classes or categories. This can be done manually or with the help of powerful machine learning algorithms. The problem with doing this manually is that it takes up a lot of time and resources.

Let’s say you own a blogging website or a news website. Every article that is being posted has to be classified and put into a category. Making people read these articles manually is both time consuming and expensive. It would be easier if the computer itself classified these articles, as soon as they are posted. This is where natural language processing comes into play. Natural Language Processing or NLP, is a Machine Learning (ML) task that is used to train an ML model to recognize text data and get meaningful insights from it. This means that a trained ML model will be able to go through some text data and give us some context on it.

So, if you pass an article as input, this model will be able to tell you where it belongs. NLP can also be used to do other interesting tasks such as Sentiment Analysis. This means that a model will be able to tell if some text data is positive, negative, or neutral about any topic that is in discussion. Context Analyzer provides solutions for both of these tasks.