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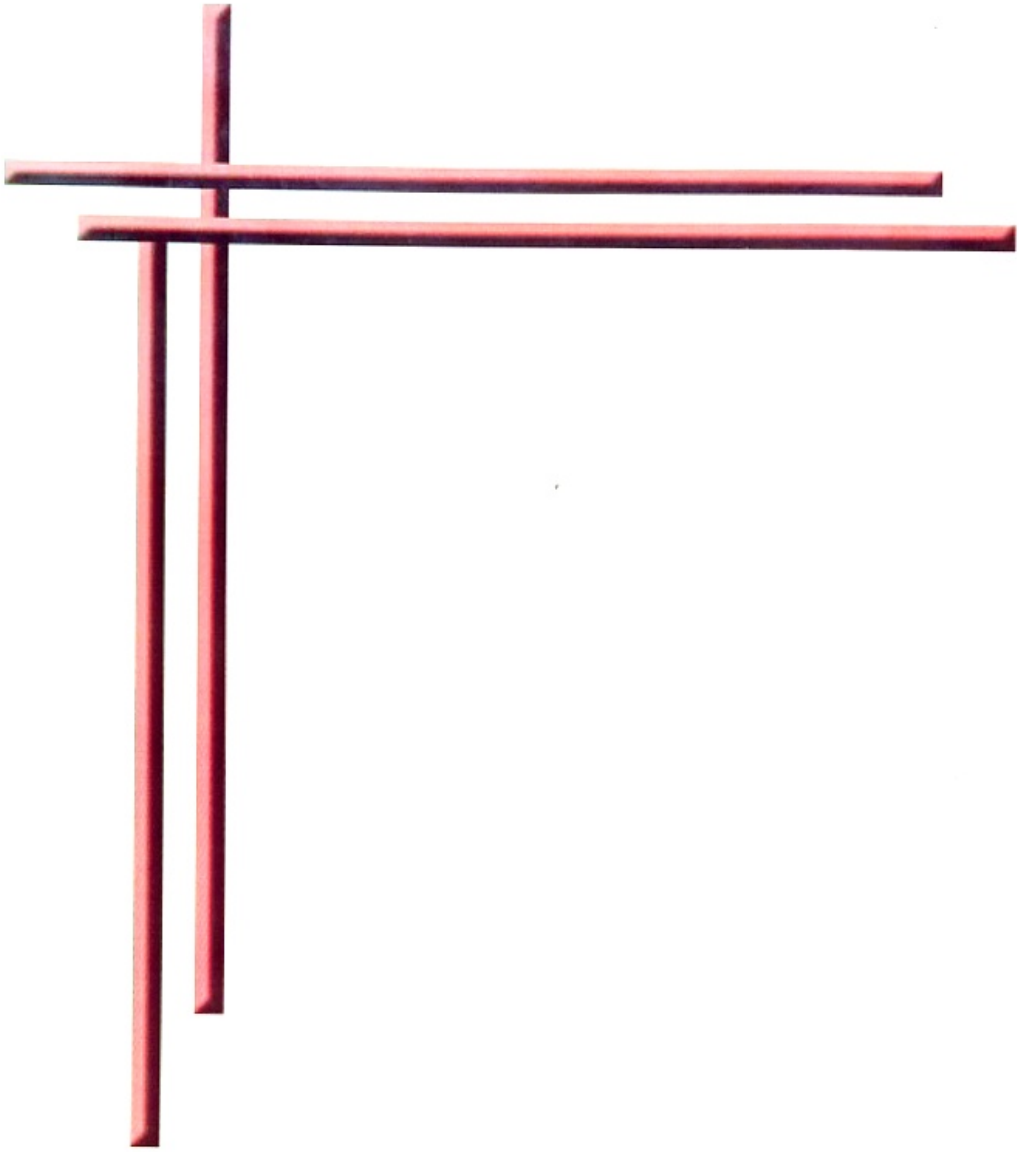

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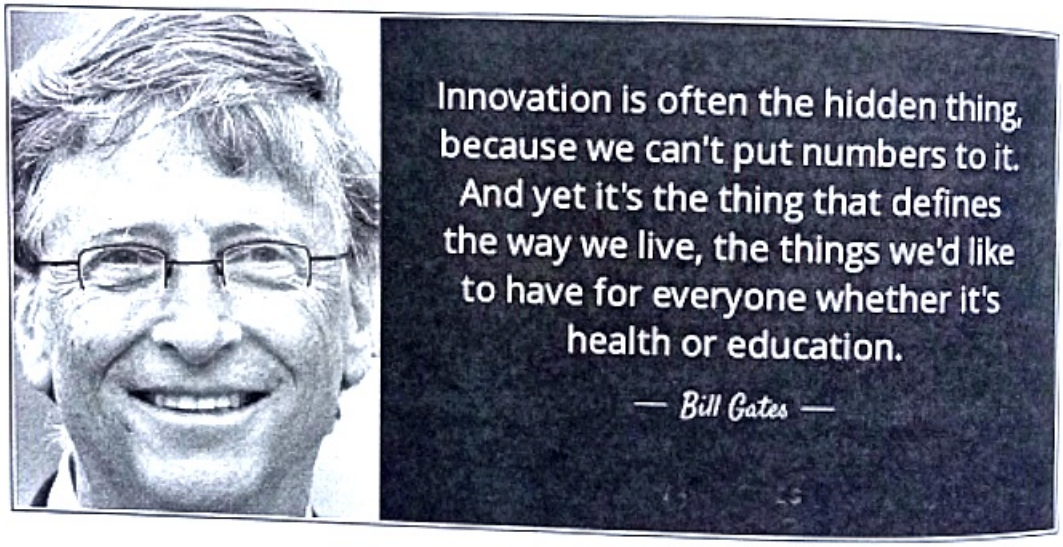
Innovation is often the hidden thing, because we can't put numbers to it. And yet it's the thing that defines the way we live, the things we'd like to have for everyone whether it's health or education.
— Bill Gates —

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Chief Editor

Dr. Jayan Erancheri Illam

Principal

Sreekrishnapuram V. T. Bhattathiripad College,
Mannampatta, Palakkad, Kerala.

Editors

Dr. Saritha Namboodiri

Head of the Department of Computer Science and
IQAC - Coordinator
Sreekrishnapuram V. T. Bhattathiripad College,
Mannampatta, Palakkad, Kerala.

Bhavya P.V.

Assistant Professor

Department of Computer Science
Sreekrishnapuram V.T. Bhattathiripad College,
Mannampatta, Palakkad, Kerala.

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Bhavya P.V.

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Preface

This book "**Innovations in Education**" is a collaborative initiative by Sreekrishnapuram V.T. Bhattathiripad College, University of Calicut. This aims to comprise the research perspectives of E-teaching and E-Content development. Researchers are from different educational backgrounds and they all are here to express their innovative ideas. Now, there is a lot of researches going on in this area of E-teaching and E-Content development. This book aims at motivating beginners in E-teaching by introducing new methodologies, going through discussions about the impact of digital teaching in the higher education area, and also provides new insights about E-teaching and E-learning. It is the need of the present day scenario. We extend our sincere gratitude to all who stood along with us in this great venture. We congratulate all the authors for their contributions to this volume.

This book suggests some approaches that they can adopt to manage this sudden shift of teaching and learning from physical classrooms to digital classrooms. Even though the internet and all the E-teaching technologies are around us for a long time, we were hesitant of implementing these into our Teaching-Learning process. This book aims to walk along with the teachers and guides them to a new era of E-teaching.

We must thank our publisher Mr. Suresh Chandra Sharma, Managing Director of Neelkamal Publications Pvt. Ltd., New Delhi-Hyderabad, who has taken a lot of interest in this book. His efforts to bring out the Book in the excellent form will always be remembered.

We feel happy to entertain any suggestions and additions for refinements of this book and all such modifications will be taken care of in the next issue of the book.

Editors

Dr. Jayan Erancheri Illam
Dr. Saritha Namboodiri
Bhavya P.V.

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Thanks to everyone on our publishing team and our publishing partner Neelkamal Publications Pvt. Ltd., for their sincere cooperation.

The technical support given by EMMRC, University of Calicut for our teachers and contributors to the book in related to educational technology is highly appreciated. We express our sincere gratitude to the team EMMRC for this successful endeavour.

We are extending our gratitude to all the contributors of the book.

Thank all those who contributed to the success of the physical creation to completion of this book.

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Contributors

This book is a compilation of research works and articles from the academicians and faculties of different disciplines from the educational institutions of Kerala.

The contributors of the book are:

1. Dr. Ampili Aravind, Principal, NSS Training College, Ottapalam.
2. Dr. Ashish, Assistant Professor, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta.
3. Suprabha. K. Assistant Professor, NSS Training College, Ottapalam, Palakkad.
4. Dr. G. Subramonian, Principal, Sri Ramakrishna Mission, Vidyalaya College of Education (Autonomous), Coimbatore, Tamil Nadu.
5. Sangeetha Achuthan, Assistant Professor, NSS College, Manjeri
6. Swapna M.P., Research Scholar, Dept. of Computer Science, Sri Ramakrishna College of Arts and Science for Women, Coimbatore.
7. Dr. G. Satyavathy, Associate Professor, Dept. of Computer Science, Sri Ramakrishna College of Arts and Science for Women, Coimbatore.
8. Niman S., Assistant Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
9. Subha I.N., Assistant Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
10. Dr. Umer Farooque, Assistant Professor, Farook Training College, Calicut.
11. Santhosh T.M., Research Scholar, Farook Training College, Calicut.
12. Sadeep. K., Assistant Professor and Head, Dept. of Physical Education, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.

13. Mohammed Azeez V.K., Ph.D. Research Scholar (Full Time), Department of Physical Education, Annamalai University, Tamil Nadu.
14. Dr. Seema Menon K.P., Assistant Professor, NSS Training College, Ottapalam.
15. Dr. Sagy John, HSST Zoology, GHSS Puthuppadi, Kozhikkode.
16. Rathi K.N., Assistant Professor, Department of Commerce, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
17. Sathyabhama N., Assistant Professor, Department of History, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad
18. Vidya K., Assistant Professor, Department of Commerce, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
19. Bhavya P.V., Assistant Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
20. Aswathy A., Assistant Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
21. Sathyavathi M., Assistant Professor, Department of Economics, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
22. P. Divya, Assistant Professor, Department of Commerce, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
23. Anu, A.N., Assistant Professor, Department of Commerce, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
24. Vijayalakshmi. K.K., Assistant Professor, Department of Economics, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.
25. Rajitha, M., Assistant Professor, CCST for Women, Karalmanna.

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INNOVATIONS IN EDUCATION

Contents

1. Experimental Use of Blended Learning Instructional Strategy for Effective Teaching at Higher Secondary Level ... 1

1.1 Introduction ... 2
1.2 Need and Significance of the Study ... 2
1.3 Objectives of the Study ... 2
1.4 Hypotheses of the Study ... 3
1.5 Methodology of the Study ... 3
1.6 Analysis and Interpretation of Data ... 4
1.7 Findings of the Study ... 6
1.8 Conclusion ... 6

2. Artificial Intelligence Its Impact on Employment and the Workforce ... 8

2.1 Introduction ... 8
2.2 Application Areas of Artificial Intelligence ... 10
2.3 Impact of Artificial Intelligence on Employment and Work Force ... 11
2.4 Conclusion ... 12

3. Remodelling Educational Sector, Revolutionized by the Disruptive Decentralized Blockchain Technology ... 14

3.1 Introduction ... 15
3.2 Blockchain – The Open Distributed Decentralized Ledger ... 16
3.3 Blockchain Use Cases in Education Sector ... 16

3.4 Challenges of Adopting Blockchain Technology ... 20
3.5 Conclusion ... 21

4. Sentiment Analysis of Animated and Non-animated E-learning Content ... 23

4.1 Introduction ... 24
4.2 Literature Review ... 24
4.3 Proposed Approach ... 24
4.4 Conclusion ... 27

5. E-resources and Coconut Sector ... 29

5.1 Introduction ... 29
5.2 Objectives ... 30
5.3 Methodology ... 30
5.4 Need of E-resources ... 30
5.5 Types of E-resources ... 31
5.6 E-resources Related to Agriculture and Coconut in India ... 32
5.7 Problems ... 35
5.8 Conclusion ... 36

6. Information Communication Technology (ICT) as a Learning Tool in Commerce among Students at Higher Secondary Level ... 39

6.1 Introduction ... 40
6.2 Significance of the Study ... 40
6.3 Statement of the Problem ... 40
6.4 Operational Definitions ... 41
6.5 Objectives of the Study ... 41
6.6 Hypotheses ... 41
6.7 Methodology ... 42
6.8 Findings of the Study ... 44
6.9 Educational Implication ... 46
6.10 Conclusion ... 46

7. Importance of Leadership ... 48

7.1 Introduction ... 48

7.2 Meaning and Importance of Leadership ... 49

7.3 Leadership Nature and Leadership Importance ... 49

7.4 Why is Leadership Important for Students? ... 49

7.5 The 3 Most Important Roles of a Leader ... 49

7.6 Importance of a Good Leader ... 50

7.7 Qualities of a Good Leader ... 51

7.8 Conclusion ... 52

8. Making Teaching–Learning Effective Through ICT ... 54

8.1 Introduction ... 54

8.2 Components of ICT ... 55

8.3 ICT in Education ... 55

8.4 Advantages of ICT in Education ... 56

8.5 Role of ICT in Teaching Learning Process ... 56

8.6 Usage of ICT in Teaching Learning Process ... 57

8.7 Conclusion ... 57

9. Magic Tricks as a Powerful Teaching Tool in College Classrooms ... 59

9.1 Introduction ... 60

9.2 Operational Definition ... 61

9.3 Review of Related Literature ... 61

9.4 Magic Tricks as a Teaching Tool ... 63

9.5 Theoretical Bases for Use of Magic Tricks as an 'Ice-breaker' in Classroom ... 64

9.6 Benefits of Use of Magic Tricks in the Classroom ... 65

9.7 Guidelines for Appropriate Use of Magic in the Classroom ... 65

9.8 Limitations of Use of Magic Tricks in the Classroom ... 66

9.9 Magic Trick E-Resources ... 66

9.10 Conclusion ... 66

10. Social Media Competence of Prospective Teachers in Relation to their Academic Self-efficacy ... 70
10.1 Introduction ... 71
10.2 Need and Significane of the Study ... 71
10.3 Objectives of the Study ... 72
10.4 Hypotheses of the Study ... 72
10.5 Methodology of the Study ... 73
10.6 Data Analysis and Interpretation of Data ... 73
10.7 Findings of the Study ... 75
10.8 Educational Implications of the Study ... 75
10.9 Conclusion ... 76
11. Fostering of Socially Responsible Leadership among Undergraduate Students through NSS ... 77
11.1 Introduction ... 78
11.2 Review of Related Literature ... 79
11.3 Objectives of the Study ... 80
11.4 Hypotheses ... 80
11.5 Methodology Used ... 80
11.6 Results and Discussion ... 81
11.7 Findings ... 82
11.8 Conclusion ... 83
12. Facial Expression Recognition Using Convolution Neural Network for Adaptive Learning in Mooc ... 84
12.1 Introduction ... 85
12.2 Literature Survey ... 85
12.3 System Architecture ... 88
12.4 System Implementation Using CNN ... 90
12.4.1 Dataset ... 90
12.4.2 Convolution Neural Network ... 91
12.4.3 Testing and Evaluation ... 92
12.4.4 Analysis ... 93
12.5 Results ... 93
12.6 Conclusion and Future Work ... 93

13. Memory Techniques for Students ... 95
13.1 Introduction ... 95
13.2 Definition ... 96
13.3 Memory Types ... 96
13.4 How We Form Memories ... 97
13.5 Ways to Better Remember Our Lessons ... 99
13.6 Conclusion ... 105
14. Google Classroom as a Tool for Effective Learning ... 107
14.1 Introduction ... 107
14.2 Google Classroom as an Effective Tool of Learning ... 111
15. Remote Online Proctoring - Paving Way to Secure Digitalized Education ... 114
15.1 Introduction ... 114
15.2 Statement of the Problem ... 115
15.3 Objectives of the Study ... 115
15.4 Significance of the Study ... 115
15.5 Research Methodology ... 116
15.6 Limitations of the Study ... 116
15.7 Review of Literature ... 116
15.8 Concept of Proctoring ... 116
15.9 Conclusion ... 120
16. Blended Learning: An Overview ... 121
16.1 Introduction ... 121
16.2 Literature Review ... 122
16.3 Advantages in Blended Learning ... 122
16.4 Disadvantages ... 124
16.5 Types of Blended Learning ... 124
16.6 Conclusion ... 126

17. A Study on the Effectiveness of Swayamprabha Channel Lectures for Promoting the Self-Learning Skills of College Students ... 128

17.1 Introduction ... 129

17.2 Conceptual Framework: About Swayam, Swayamprabha and Self-learning Process ... 129

17.3 Importance of the Study ... 131

17.4 Statement of Problem ... 131

17.5 Objective of the Study ... 131

17.6 Hypothesis ... 132

17.7 Methodology of the Study ... 132

17.8 Major Findings and Discussions ... 133

17.9 Suggestions for Using Swayamprabha Video Lectures ... 134

17.10 Scope for Future Research ... 134

17.11 Conclusion ... 134

Index ... 136

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CHAPTER

4

Sentiment Analysis of Animated and Non-animated E-learning Content

– Niman S.*
Subha I.N.**
Dr. Saritha Namboodiri***

ABSTRACT

Based on the methodology of presentation the fundamental classification of e-learning contents are animated and non-animated/ traditional e-learning contents. The experiment hypothesized that for making the demonstration more attractive and effective, the content developer should choose animated e-content development. This opinion is postulated based on the sentiment analysis of the user/learner reviews of different e-learning content. With the help of supervised machine learning, naïve Bayes classifier algorithm and statistical tools it is possible to measure the effectiveness of e-learning content. The experiment result shows that positive sentiment of animated e-learning content is greater than that of non-animated e-learning content.

* **Niman S.**, Assistant Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.

** **Subha I.N.**, Assistant Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.

*** **Dr. Saritha Namboodiri**, Associate Professor, Department of Computer Science, Sreekrishnapuram V.T. Bhattathiripad College, Mannampatta, Palakkad.

4.1 Introduction

In today's scenario teaching and learning changed its style a lot. Information and communication technology made its remarkable role in this field. Video lectures, online learning platforms are undertaking great job in this regard Students can learn anything from anywhere and anyone who prepares e-contents by synchronous or asynchronous.

This paper suggests the importance of animations in the content to the better interpretation of the topic. Research says animations affect the cognitive domain of the learner positively[1]. Paper shows it is true by analyzing the reviews of the spectators of the video lectures. Through sentiment analysis of reviews of the learners using naïve bays algorithm it is made clear that animation based videos got more positive reviews than non-animation based videos or tradition green board teaching technique following videos. Paper suggests that animation has a good role in positive reviews.

4.2 Literature Review

Even though too many studies available on the sentiment analysis of YouTube comments, till now nobody put effort to analyze and cross match the sentiment Features of Animated YouTube e-learning contents with non-animated traditional YouTube contents. One of the inspiration of this work is the paper with title "A Sentimental Analysis for YouTube Data using Supervised Learning Approach – Ashutosh Bansal, Chunni Lal Gupta, and A. Muralidhar"[2]. Through the paper authors presenting an idea regarding analysis of YouTube comments with help of supervised machine learning and statistical programming tools.

Another remarkable work regarding this topic is "Classification of YouTube Data based on Sentiment Analysis - Shaila S.G, Prasanna MSM, Kishore Mohit"[3] they postulates the same concept with the help of big data analysis tools.

4.3 Proposed Approach

Internet based Pedagogical methodologies and facilities for learning are updated drastically during this era. This helps to increase the learning abilities and knowledge levels of learners. Subject content can be presented in different ways, the fundamental classification are:

1. Conventional lecturing method
2. With the help of multimedia and animation.

One of the mile stone during this evolution of learning is introduction of Massive Open Online Courses (MOOC)[4]. Likewise internet resource sharing MOOC introduces the sharing of abilities of good and efficient teachers from certain classrooms to the openness of internet.

Through this paper we are trying to analyse the user reviews and comments on animated online lecture videos and Non-animated conventional videos. For identifying their betterness to Convey the course content or objectives of the course. Investigation based on the reviews of the above two methodologies indicates that the effectiveness of learning is higher in the case of animated e-content learning

YouTube is a very large platform for e-learning contents. One of the fundamental facility of YouTube is that it allows users / viewers to submit their comments about their experience on a particular content. These reviews can be consider as the valuable feedback from the user. While analyzing this comments it is possible to postulate valuable suggestions and opinions.

A content generator or producer only can produce and publish e-learning contents through the YouTube platform but they couldn't identify the emotions of viewers or learners unless the content is a live interactive telecasting. In this case the only way to understand the viewers is through their comments and emoji.

As the part of the study the sentiment analysis of YouTube reviews applied on the comments of graphical and non-graphical e-learning contents shows a clear-cut result that indicates that animation based videos got more positive reviews than non-animation based videos or tradition green board teaching technique following videos.

Stages of the study can be listed as follows:

- Collecting YouTube comments and reviews with the help of a Google API
- Cleaning data by removing un necessary words, Map the words to a list
- Identify the bigrams with high frequency
- Analyze the data with the help of a good data set
- Analyse the result with the help of statistical tools

Most convenient way for the investigation is that to perform a sentiment analysis on the reviews/ comments of the e learning content. Due to the excessiveness of number of learners and comments, it is convenient to use machine learning operation for the sentiment analysis. As it is the basic

stage of investigation Naïve Bayes probabilistic classifier based supervised machine learning is used for the analysis.

The program initially pulls the comments from YouTube comment areas with the help of a YouTube API. Then it converts the data to a comma separated list.

The next step of operation is the cleaning of scrawled data. For that function one of the best natural language processing method is focusing on bigrams. Bigrams are always possessing same meaning in all contest rather than individual words with situational meaning. By considering the bigrams with largest frequencies, it is possible to determine the overall sentiment of the listener.

Bigrams with highly bounded frequencies can be compared with data set. A naïve based probability classifier[5] canclassify bigrams based on their sentiment. The advantage of native Bayes classifier is that it can be scalable to massive proportionalities of data and it requires very less number of computation and its accuracy is comparatively high.

Bayes' Theorem finds the probability of an event occurring given the probability of another event that has already occurred

$$P(X|Y) = (P(Y|X)\,P(X)) / P(Y)$$

where Y= (y1, y2, y3…)

In our case, the class variable 'X' has only two outcomes, Yes or No

So that X with maximum probability is

$$y = \text{argmax}_y\, P(y) \Pi^n_{i=1} P(x_i \mid y)$$

For attaining maximum accuracy on assessment data set should contain enough number of training data. Here the system is trained with Positive, negative bigrams and emoji which are packed inside 3 separate data set files, each file contains more than one lakh number of bigrams. And also these data sets are updated continuously with new entries.

Accuracy check on the data set indicates that the system can possess accuracy more than 78%. It is a quite good rate of accuracy for a supervised system.

Inputs for the experiment chosen based on number of reviews and number of views. Equal number of animated/graphical e-learning videos and conventional lecturing videos are investigated for the experiment. Results of the experiments describes about the overall sentiment of the comments and reviews of the video.

Sentiment value of animated and conventional e-contents are tabulated separately and calculated the average value of each session and analyzed with the help of pi diagram. Results proved that the animated e-learning content helps to increase the intellectual level of the learner through better understanding of content. Course content is delivered efficiently in animated e-content videos rather than conventional e-learning contents.

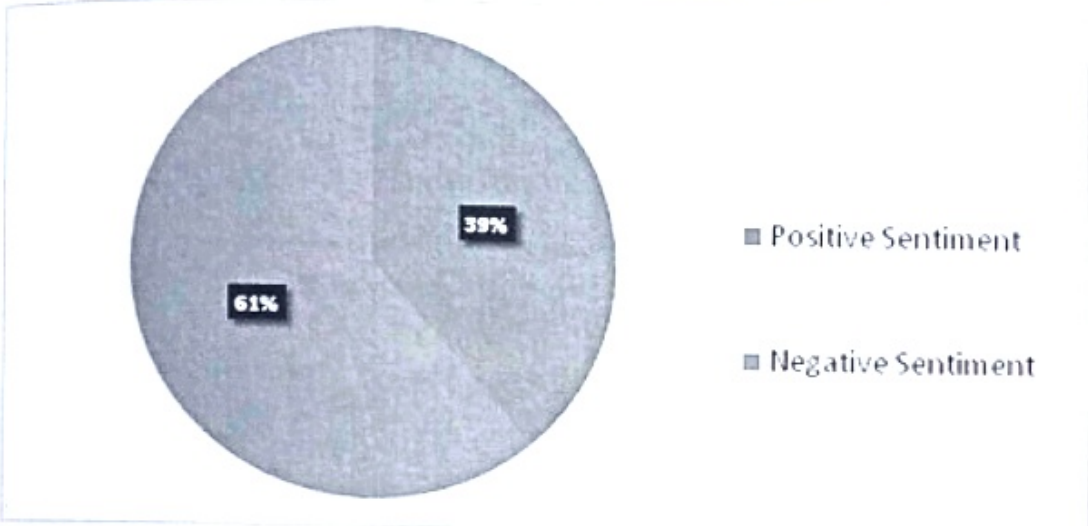

Fig.-4.1: Pi diagrum of Sentiment Analysis of Animated E-contents

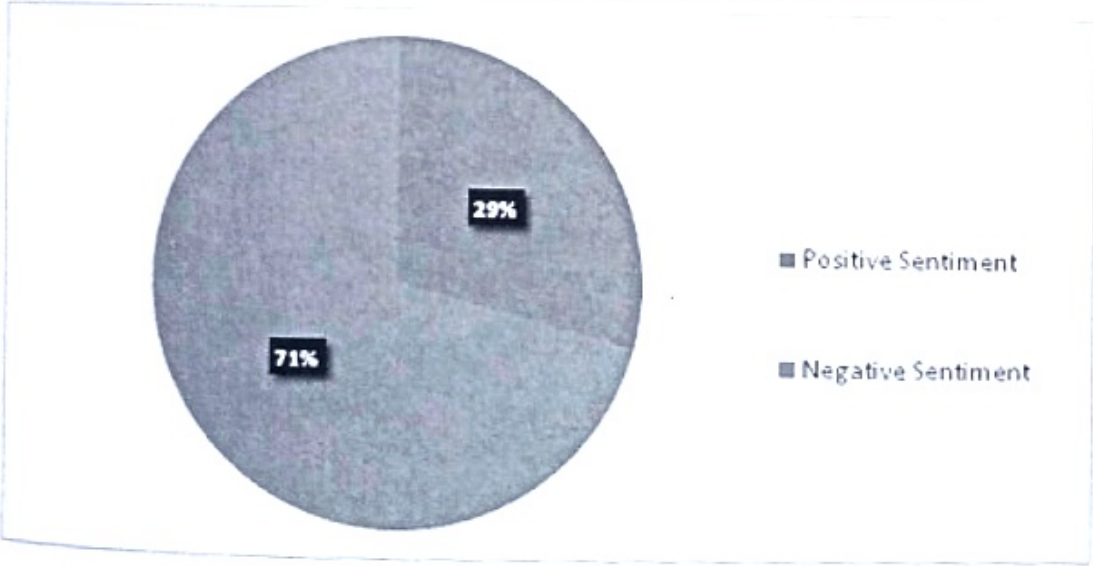

Fig.-4.2: Pi diagrum of Sentiment Analysis of Non- Animated E-contents

4.4 Conclusion

As the part of this research work, Reviews of Animated and non-animated e-learning content collected from You Tube videos. And to do the sentiment analysis on the comments and reviews shows clearly that Animated e-content get more positive reviews than non-animated positive reviews. Even

in the small samples it is possible to distinguish considerably large difference in positive comments. So it can be clearly proved that animated e-contents can be consider as the best method for e-learning.

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