VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama", Belagavi-560014, Karnataka

A PROJECT REPORT ON

"Real Time Sentiment Analysis Using Machine Learning"

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE

BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE & ENGINEERING

Submitted By

Siddalingaiah N M	(1SV19CS068)
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Under the guidance of

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Associate Professor, Dept. of CSE.

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SHRIDEVI EDUCATION

Department of Computer Science and Engineering

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2022-23

Sri Shridevi Charitable Trust (R.)
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that, the project entitled "**Real Time Sentiment Analysis Using Machine Learning**" has been successfully carried out by Siddalingaiah N M [1SV19CS068], Suchitra H C [1SV19CS074], Supriya C S [1SV19CS077], Varsha N [1SV19CS081], in partial fulfillment for the award of **Bachelor of Engineering** in **Computer Science & Engineering** of the **Visvesvaraya Technological University, Belagavi** during the academic year **2022-23.** It is certified that all the corrections/suggestions indicated for internal assessments have been incorporated in the report. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelor of Engineering Degree.

Manjula T 25/5/23

Signature of Guide
Dr. Manjula T B.E., M.Tech, Phd
Associate Professor,
Dept. of CSE,
SIET, Tumakuru.

25/5/23

Signature of H.O.D
Dr. Basavesha D B.E., M.Tech, Phd
Associate Professor & HOD
Dept. of CSE,
SIET, Tumakuru.

Signature of Principal
Dr.Narendra Viswanath M.E., Ph.D., MIE, MISTE, MIWS., FIV.,
Principal,
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Name of the Examiners	Signature with Date
1. Dr. Basavesha D	26/5/23
2. Wasim Uddin	26/5/23

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DECLARATION

We, **Siddalingaiah N M [1SV19CS068], Suchitra H C [1SV19CS074], Supriya C S [1SV19CS077], Varsha N [1SV19CS081],** student of VIII semester **B.E** in Computer Science & Engineering, at Shridevi Institute of Engineering & Technology, Tumakuru, hereby declare that, the project work-II entitled **"Real Time Sentiment Analysis Using Machine Learning "**, embodies the report of our project work carried out by our team under the guidance of **Dr. Manjula T, Associate Professor, Department of CSE**, SIET, Tumakuru as partial fulfillment of requirements for the award of the degree in **Bachelor of Engineering in Computer Science & Engineering of Visvesvaraya Technological University, Belagavi**, during the academic year **2022-23**. The project has been approved as it satisfies the academic requirements in respect to the Project work.

Place: Tumakuru
Date: 26/05/2023

Student Name & Signature

Siddalingaiah N M	**[1SV19CS068]**	Siddalingaiah.N.M
Suchitra H C	**[1SV19CS074]**	Suchi
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TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. SIDDALINGAIAH N M** bearing USN **1SV19CS068** Student of **Shridevi Institute of Engineering & Technology** has successfully completed his Project Work titled "Real Time Sentiment Analysis Using Machine Learning".

We wish every success in his career.

For ShriTEK Innovations

Authorized Signature

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TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Ms. SUCHITRA H C** bearing USN **SV19CS074** Student of **Shridevi Institute of Engineering & Technology** has successfully completed her Project Work titled "Real Time Sentiment Analysis Using Machine Learning".

We wish every success in her career.

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TO WHOM SO EVER IT MAY CONCERN

his is to certify that **Ms. SUPRIYA C S** bearing USN **SV19CS077** Student of **Shridevi Institute of Engineering & echnology** has successfully completed her Project Work titled Real Time Sentiment Analysis Using Machine Learning".

Ve wish every success in her career.

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TO WHOM SO EVER IT MAY CONCERN

his is to certify that **Ms. VARSHA N** bearing USN **SV19CS081** Student of **Shridevi Institute of Engineering nd Technology** has successfully completed her Project Work tled "Real Time Sentiment Analysis Using Machine Learning".

We wish every success in her career.

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ACKNOWLEDGEMENT

This project work will be incomplete without thanking the personalities responsible for this venture, which otherwise would not have become a reality.

We express our profound gratitude to **Dr.Narendra Viswanath,** Principal, S.I.E.T, for his moral support towards completing our project work.

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We would like to thank my guide **Dr. Manjula T, Associate Professor,** Department of computer Science and Engineering, SIET for her help, sharing her technical expertise and timely advice.

We whole heartedly thank, **Mr. Girish L,** Assistant Professor, Project coordinator, Department of Computer Science and Engineering, for the support.

We would like to express our sincere gratitude to all teaching and non-teaching faculty of the department of CSE for guiding us throughout the course of this project by giving valuable suggestion and encouragement.

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By,

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Abstract

Research on machine assisted text analysis follows the rapid development of digital edia, and sentiment analysis is among the prevalent applications. Traditional sentiment ıalysis methods require complex feature engineering, and embedding representations have ɔminated leader boards for a long time. However, the context-independent nature limits their presentative power in rich context, hurting performance in Natural Language Processing ŊLP) tasks. Bidirectional Encoder Representations from Transformers (BERT), among other re-trained language models, beats existing best results in eleven NLP tasks (including ntence-level sentiment classification) by a large margin, which makes it the new baseline of xt representation. As a more challenging task, fewer applications of BERT have been bserved for sentiment classification at the aspect level. We implement three target-dependent ariations of the BERT base model, with positioned output at the target terms and an optional ntence with the target built in. Experiments on three data collections show that our BERT ıodel achieves new state-of-the-art performance, in comparison to traditional feature ngineering methods, embedding-based models and earlier applications of BERT. With the uccessful application of BERT in many NLP tasks, our experiments try to verify if its context-ware representation can achieve similar performance improvement in aspect-based sentiment nalysis. Surprisingly, coupling it with complex neural networks that used to work well with mbedding representations does not show much value. On the other hand, incorporation of rget information shows stable accuracy improvement, and the most effective way of utilizing hat information is displayed through the experiment.

Results

Conclusion

References

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