VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama", Belagavi-560014, Karnataka

PROJECT REPORT ON

"AN EFFECTIVE CLASSIFICATION MODEL TO PREDICT CUSTOMER CHURN IN BANKING INDUSTRY"

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE PROJECT

BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE & ENGINEERING

Submitted By

GURUPRASAD B S	**(1SV18CS018)**
YASHVANTHKUMAR P	**(1SV18CS047)**
YASHAS G	**(1SV19CS084)**
BHARATH KUMAR J	**(1SV18CS006)**

Under the guidance of

Mrs. Kotramma Mathada B.E.,M.Tech.,

Assistant Professor, Dept. of AIDS.

Department of Computer Science and Engineering

SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Affiliated To Visvesvaraya Technological University)
Sira Road, Tumakuru – 572106, Karnataka.

2022-2023

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ESTD: 2002

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that, the project entitled "AN EFFECTIVE CLASSIFICATION MODEL TO PREDICT CUSTOMER CHURN IN BANKING INDUSTRY" has been successfully carried out by Guruprasad B S [1SV18CS018], Yashvanthkumar P [1SV18CS047], Yashas G [1SV20CS084], Bharath Kumar J [1SV18CS006], 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/suggestionsindicated for internal assessments have been incorporated in there port. The project report hasbeen approved as it satisfies the academic requirements in respect of project work prescribedfor the Bachelor of Engineering Degree.

Signature of Guide
Mrs.Kotramma Mathada B.E.,M.Tech.,
Assistant Professor,
Dept.of AIDS,
SIET, Tumakuru.

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

Signature of Principal

Dr.Narendra Viswanath M.E.,Ph.D., MIE, MISTE, MIWS., FIV.,
Principal,
SIET,Tumakuru

ExternalViva

Name of the Examiners	Signature with Date
1. Dr. Basavesha D	27/5/23
2. Wasim Uddin	27/5/23

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We, Guruprasad B S [1SV18CS018], Yashvanthkumar P [1SV18CS047], Yashas G [1SV19CS084], Bharath Kumar J [1SV18CS006], student of VIII semester **B.E** in Computer Science & Engineering, at Shridevi Institute of Engineering & Technology, Tumakuru, here by declare that, the project work-II entitled "AN EFFECTIVE CLASSIFICATION MODEL TO PREDICT CUSTOMER CHURN IN BANKING INDUSTRY",embodies the Report of our project work carried out by our team under the guidance of **Mrs. Kotramma Mathada, Assistant Professor, Department of AIDS**, SIET, Tumakuru as partial fulfillmentof 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 itsatisfies the academic requirements in respect to the Project work.

Place:Tumakuru
Date: 26/05/2023

Student Name & Signature

GURUPRASAD B S **(1SV18CS018)**
YASHVANTHKUMAR P **(1SV18CS047)**
YASHAS G **(1SV19CS084)**
BHARATH KUMAR J **(1SV18CS006)**

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Date: 26/05/2023

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. GURU PRASAD B S** bearing USN **1SV18CS018** Student of **Shridevi Institute of Engineering and Technology** has successfully completed his Project Work titled "An Effective Classification Model to Predict Customer Churn in Banking Industry".

We wish every success in his career.

For ShriTEK Innovations

Authorized Signature

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ShriTEK Innovations Tumkur

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TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. YASHVANTHKUMAR P bearing** USN **1SV18CS047** Student of **Shridevi Institute of Engineering and Technology** has successfully completed his Project Work titled "An Effective Classification Model to Predict Customer Churn in Banking Industry".

We wish every success in his career.

For ShriTEK Innovations

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TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. YASHAS G** bearing USN **1SV19CS084** Student of **Shridevi Institute of Engineering and Technology** has successfully completed his Project Work titled "An Effective Classification Model to Predict Customer Churn in Banking Industry".

We wish every success in his career.

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This is to certify that **Mr. BHARATH KUMAR J bearing** USN **1SV18CS006** Student of **Shridevi Institute of Engineering and Technology** has successfully completed his Project Work titled "An Effective Classification Model to Predict Customer Churn in Banking Industry".

We wish every success in his career.

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ACKNOWLEDGEMENT

This project work will be incomplete without thanking the personalities responsible for this venture, which other wise would not have become areality.

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

We would like to thank Head of Department **Dr.Basavesha D** BE,M Tech,Phd Asscoiate Professor, & Head of the Department of CSE, SIET for providing all the support and facility.

We would like to thank my guide **Mrs. Kotramma Mathada** BE,M.Tech, **Assistant Professor,** Department of AIDS, SIET for his help, sharing his 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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YASHVANTH KUMAR P **[1SV18CS047]**

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ABSTRACT

Customer churn, the phenomenon of customers ceasing their relationship with a business, poses significant challenges for companies across various industries. Identifying and predicting customer churn is crucial for organizations aiming to reduce customer attrition rates and improve customer retention strategies. This paper presents an in-depth analysis of customer churn prediction, leveraging advanced machine learning techniques. The study begins by reviewing existing literature on customer churn, exploring its causes, and highlighting its impact on businesses. Next, a comprehensive dataset comprising historical customer information and churn indicators is utilized. Feature engineering techniques are employed to extract relevant insights from the dataset, including customer demographics, transactional data, and engagement metrics. Several state-of-the-art machine learning algorithms, such as logistic regression, random forest, support vector machines, and neural networks, are implemented and evaluated for their predictive performance. To ensure robustness, the models are validated using appropriate cross-validation techniques and evaluated based on metrics such as accuracy, precision, recall, and F1-score.

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