VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JANASANGAMA, BELAGAVI – 590018

Internship (18CSI85)

On

"Water Portability Detection using Machine Learning"

Submitted in partial fulfillment for the award of the degree of

Bachelor of Engineering

In

INFORMATION SCIENCE AND ENGINEERING

Submitted by:

SATHVIK I K

1BI20IS083

Internship carried out

at

PRINSTON SMART ENGINEERS.
Vishwapriya Nagar, Begur, Bengaluru, Karnataka - 560068

Internal Guide:

Mrs. Pavithra N

Assistant Professor

Dept. of ISE, BIT

External Guide:

Mr. Akash V

Project Manager

Prinston Smart Engineers

BANGALORE INSTITUTE OF TECHNOLOGY
V.V. Puram, K.R. Road, Bengaluru - 560004
Department of Information Science &Engineering

2023-2024

BANGALORE INSTITUTE OF TECHNOLOGY

V.V. Puram, K.R. Road, Bengaluru - 560004

Department of Information Science & Engineering

CERTIFICATE

Certified that the internship carried out by **Mr. SATHVIK I K** bearing USN **1BI20IS083** a bonafide student of VIII Semester B.E., **BANGALORE INSTITUTE OF TECHNOLOGY** in partial fulfillment of Bachelor of Engineering in **INFORMATION SCIENCE AND ENGINEERING** of **VISVESVARAYA TECHNOLOGICAL UNIVERSITY**, Belagavi during the year 2023-2024. It is certified that all corrections / suggestions indicated for Internal Assessment have been incorporated in the report. The internship report has been approved as it satisfies the academic requirements in respect of internship work prescribed for the said Degree.

Internal Guide:

Mrs. Pavithra N

Assistant Professor

Dept. of ISE, BIT

HOD:

Dr. Asha T

Professor & Head

Dept. of ISE, BIT

Name of the Examiners:

Signature with Date:

1)

2)

DECLARATION

I, **Mr. SATHVIK I K** bearing USN **1BI20IS083** student of VIII semester, Bachelor of Engineering in **INFORMATION SCIENCE AND ENGINEERING, Bangalore Institute of Technology**, Bangalore hereby declare that the internship has been carried out at **PRINSTON SMART ENGINEERS, Vishwapriya Nagar, Begur, Bengaluru**. I further declare that the matter embodied in this report has not been submitted previously to any institution or university for the award of any other Degree / Diploma Certificate.

NAME: SATHVIK I K

USN: 1BI20IS083

Place: Bangalore

ACKNOWLEDGEMENT

I express my heartiest gratitude with great pleasure to **Bangalore Institute of Technology, Bangalore** that provided me an opportunity to fulfill my cherished desire to attain my goal.

I extend my thanks to our Principal **Dr. Aswath M U**, for encouraging me in all aspects to complete the internship.

I would like to thank **Dr. Asha T**, Professor & Head, Dept. of ISE, who continually helped me with her suggestions and ideas.

I immensely thank **Mr. Akash V**, Software Engineer, Prinston Smart Engineers, for giving me an opportunity to work at the project.

I immensely thank **Mrs. Pavithra N**, Associate Professor, Dept. of ISE, in supporting and guiding me in carrying out my preparations for the internship.

Finally, I thank one and all who have helped me directly or indirectly in the completion of the internship.

SATHVIK I K

EXECUTIVE SUMMARY

Water Portability Detection project focused on developing predictive models to assess water potability based on various physicochemical properties. Three machine learning algorithms were employed: Logistic Regression, Support Vector Machine (SVM), and Random Forest Classifier. The dataset, comprising water quality data, underwent initial preprocessing, including feature removal for missing values and standard scaling for normalization. The dataset was split into training (85%) and testing (15%) sets.

The models were trained and evaluated using accuracy scores and confusion matrices. Logistic Regression achieved an accuracy of 0.62, while SVM and Random Forest Classifier achieved 0.63 and 0.62. Hyperparameter tuning was performed on the SVM model using grid search to optimize parameters like C, kernel type, degree, and gamma.

Overall, the models contributed valuable insights into water potability prediction. SVM, with its optimized parameters, exhibited the highest potential for accurate prediction. Future directions could involve feature engineering, experimentation with other ensemble methods like Gradient Boosting, and acquiring more diverse datasets for further model refinement.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES