 <b>Dr D Y Patil Pratishtan's</b> <b>Dr. D.Y. Patil Institute of Engineering, Management</b> <b>and Research, Akurdi, Pune</b>		
<b>Academic Year:</b> 2025-26	<b>LP-III Mini-Project Report</b>	
<b>Term – I</b>	<b>Department: Computer Engineering</b>	<b>Date of Preparation :</b>

<b>Name of Practical</b>	Lab Practice III
<b>Mini - Project Title</b>	Build a machine learning model that predicts the type of people who survived the Titanic shipwreck using passenger data
<b>Batch</b>	B3
<b>Student Name (with roll no)</b>	45 - Om Salunkhe, 53 - Avishkar Chavan, 46 - Manmath Bhujbal, 49 - Ayush Ranjan
<b>Batch Incharge</b>	Mr. Jitendra Garud

## Introduction

The Titanic disaster is one of the most well-known tragedies in modern history. The *Titanic Survival Prediction Project* aims to analyze the famous Titanic dataset and predict whether a passenger would survive based on factors such as age, sex, ticket class, fare, and family relations. Using Logistic Regression, a supervised machine learning algorithm for binary classification, the project builds a predictive model capable of classifying survival outcomes (1 = Survived, 0 = Not Survived). This model demonstrates how data preprocessing, feature engineering, and model evaluation can be applied to solve real-world classification problems in data science.

## Aim

To build a machine learning model using Logistic Regression that predicts passenger survival on the Titanic dataset based on relevant passenger attributes.

## Objective/Motivation

- To understand and apply the concept of binary classification using logistic regression.
- To learn data preprocessing techniques, including handling missing values and encoding categorical variables.
- To visualize data using Python libraries like Matplotlib and Seaborn for understanding feature relationships.
- To gain insight into how demographic and ticket-related factors affected passenger survival during the Titanic disaster.

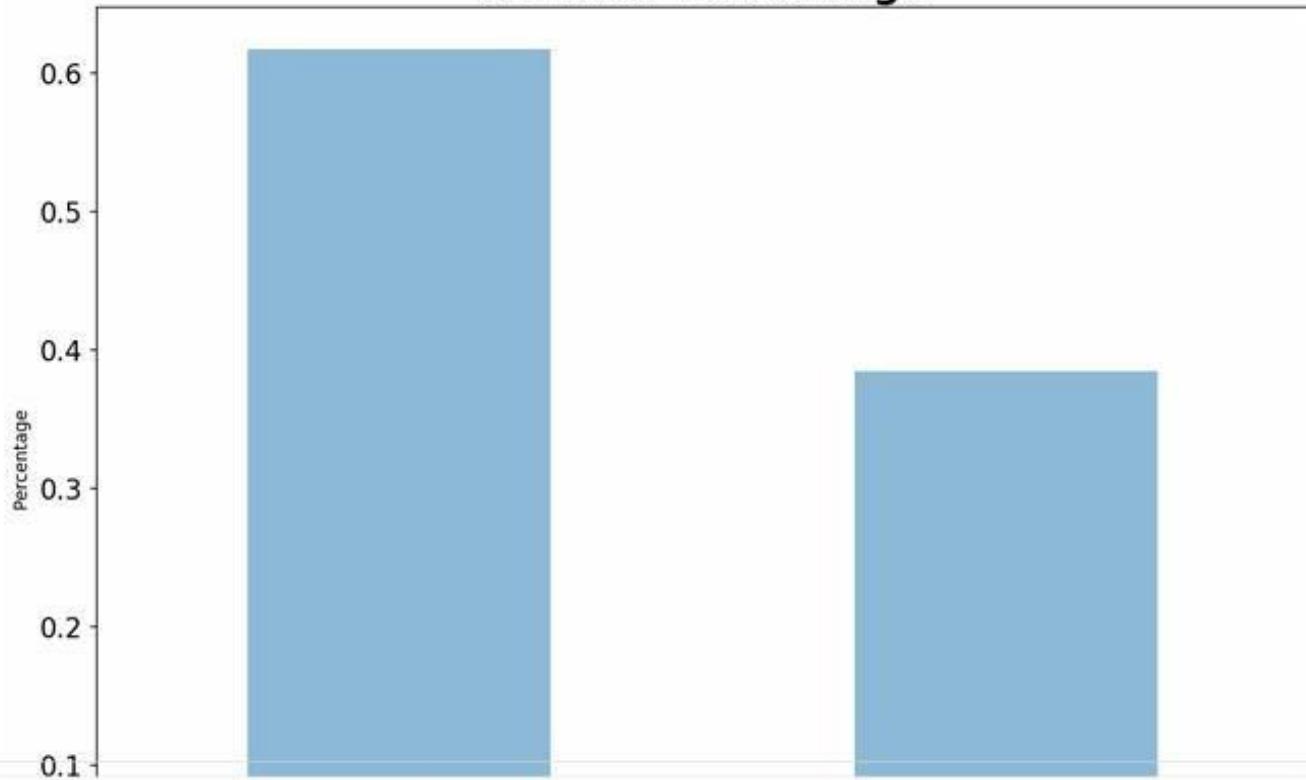
<b>DYP</b> DR. D. Y. PATIL INSTITUTE OF ENGINEERING, MANAGEMENT AND RESEARCH	<b>Dr D Y Patil Pratishthan's</b> <b>Dr. D.Y. Patil Institute of Engineering, Management and Research, Akurdi, Pune</b>	
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### Implementation and maintenance

The project uses the Titanic Dataset from Kaggle, containing details such as passenger age, gender, class, and survival status. It was implemented in Python using libraries like NumPy, Pandas, Matplotlib, Seaborn, and Scikit-learn in Jupyter Notebook. Data preprocessing involved handling missing values, encoding categorical variables (like *Sex* and *Embarked*), and selecting key features. The dataset was split into training and testing sets in an 80:20 ratio. A Logistic Regression model was trained to predict survival and evaluated using metrics such as accuracy (~80%), confusion matrix, and precision-recall scores. The results were visualized using Seaborn plots, showing that the model performed well in predicting passenger survival.

### Output Screenshots

#### Survival Percentage



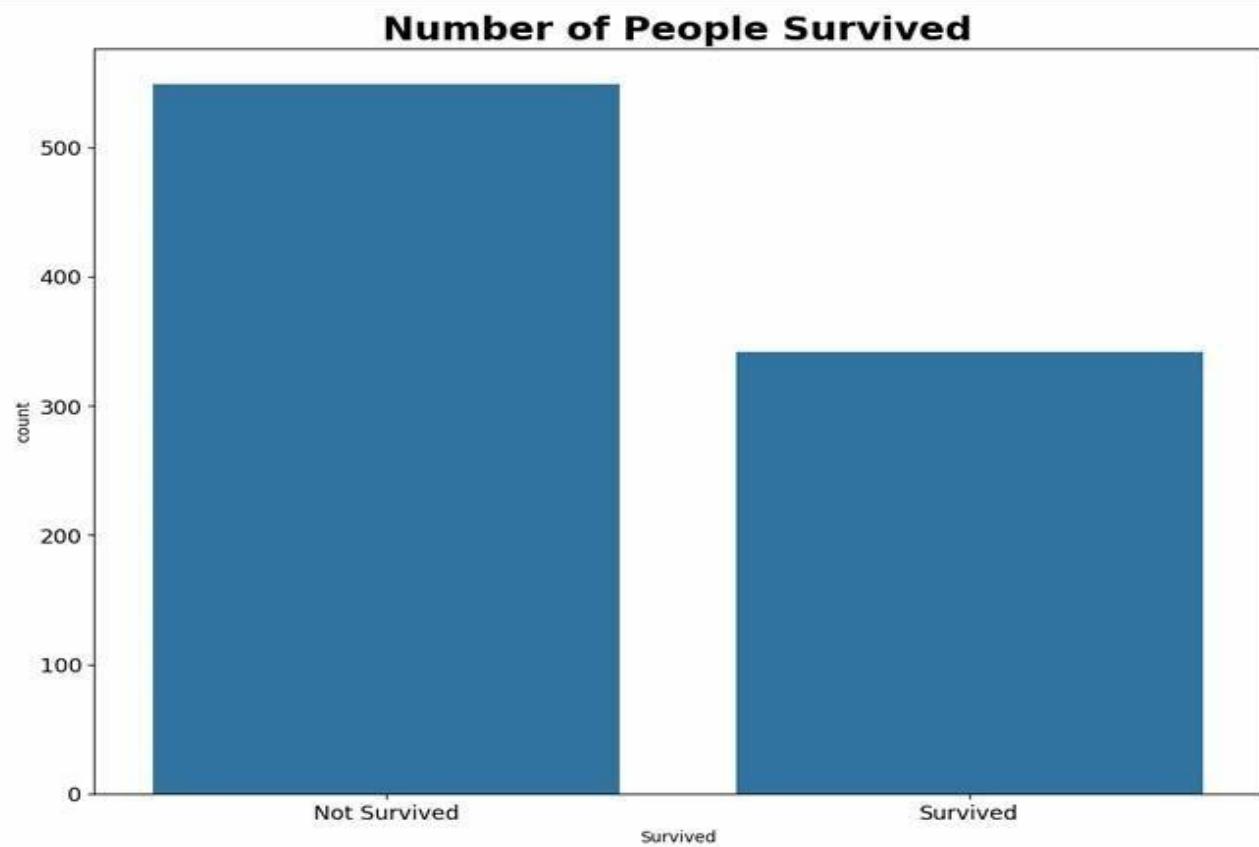
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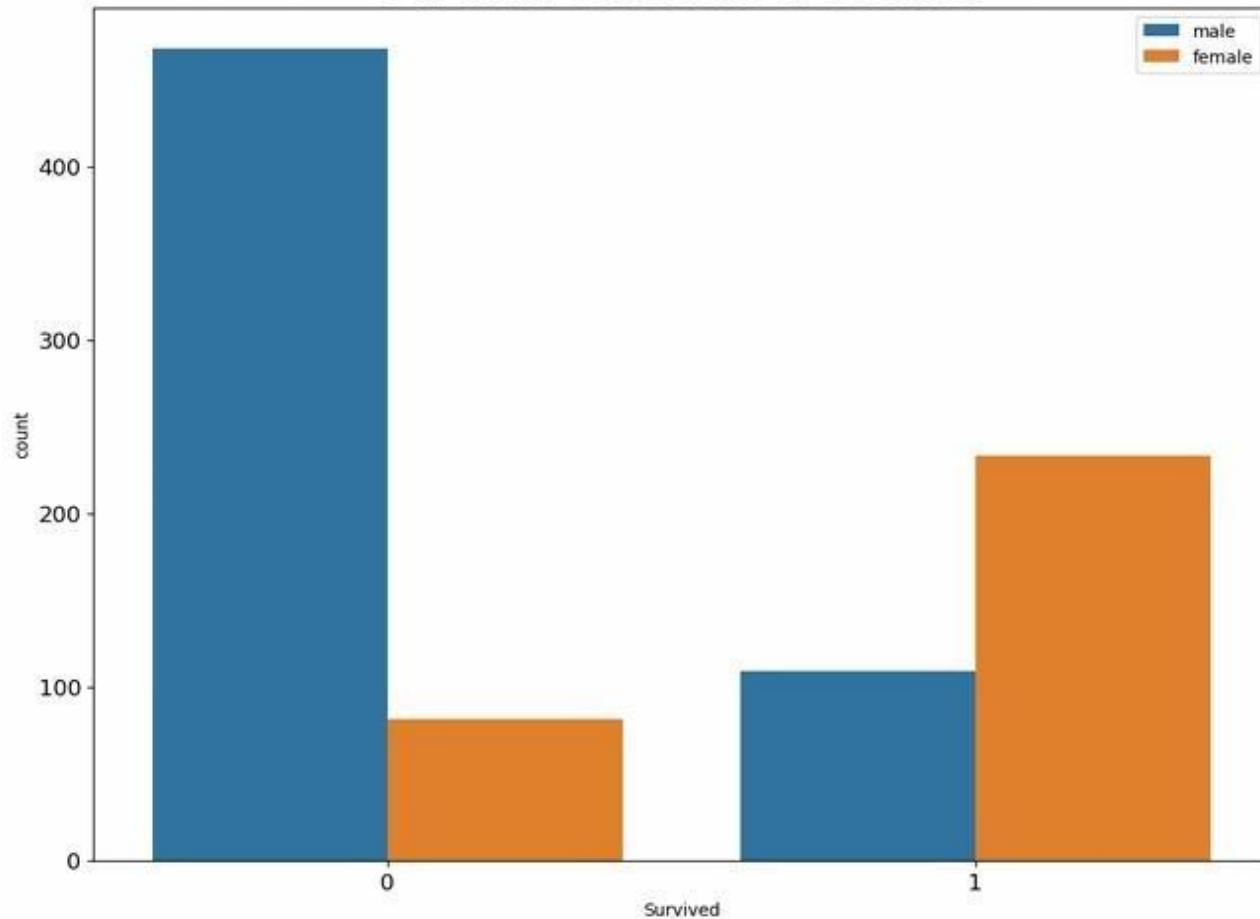
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### **Survival On Basis of Gender**



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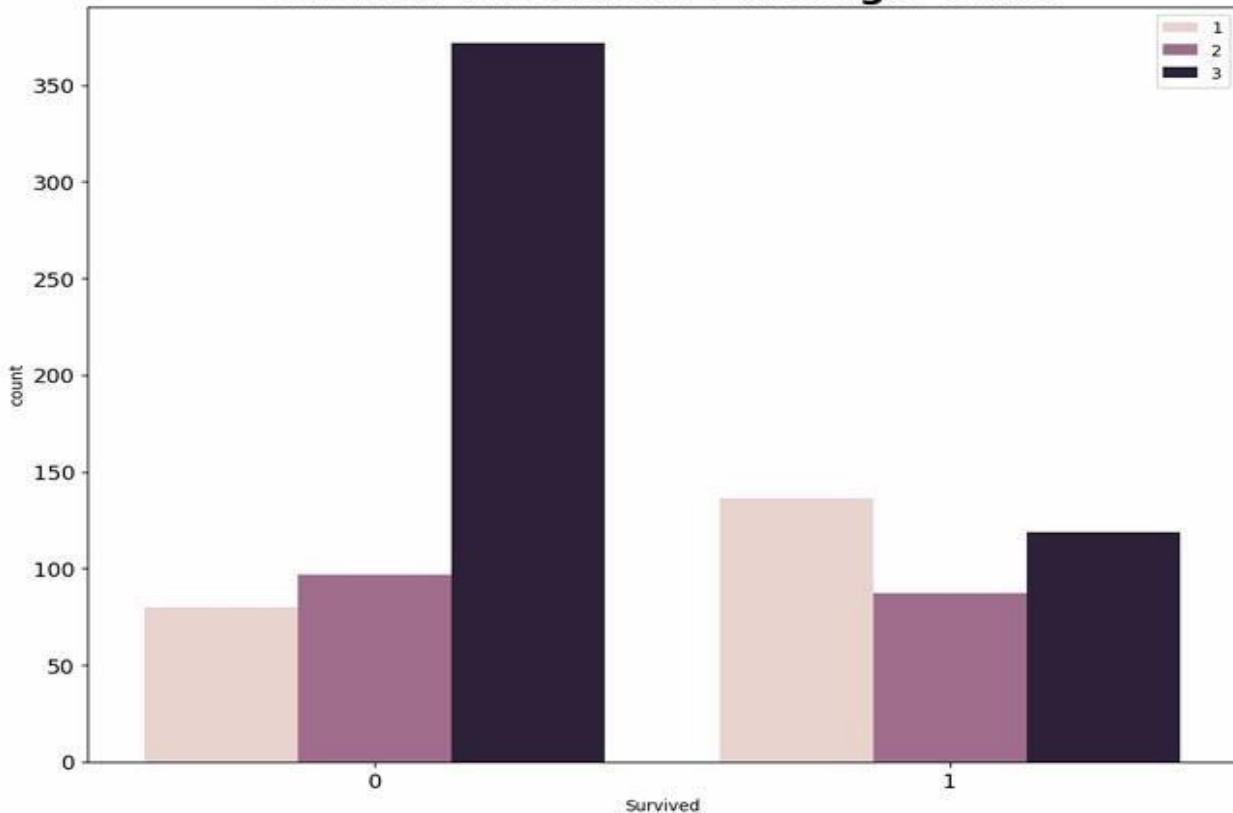
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### **Survival On Basis of Passenger Class**



### **Conclusion**

The Logistic Regression model successfully predicted Titanic passenger survival with an accuracy of around 80%, showing that factors like gender, passenger class, and age strongly influenced survival chances. The project demonstrates the use of data preprocessing, supervised learning, and evaluation metrics in developing predictive models. This project provided us valuable insight into machine learning workflows, data visualization, and the practical implementation of classification algorithms using Python.

Name & sign of student  
**Signature of Student**

Name & sign of batch incharge  
**Signature of Batch Incharge**