

A PROJECT REPORT
on
“HOTEL CHECK-IN ABANDONMENT
FORECASTING MODEL”

Submitted to
KIIT Deemed to be University

In Partial Fulfillment of the Requirement for the Award of

BACHELOR’S DEGREE IN
COMPUTER SCIENCE
By

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MUGDHA HAZRA	1928106
SHAMBHAVI	1906427
SHRESHTHA ROY	1928119
SRISHTY GUPTA	1906441

UNDER THE GUIDANCE OF

Dr. Amiya Ranjan Panda



SCHOOL OF COMPUTER ENGINEERING
KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
BHUBANESWAR, ODISHA - 751024
May 2023

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CERTIFICATE

This is certify that the project entitled

“HOTEL CHECK-IN ABANDONMENT FORECASTING
MODEL“

submitted by-

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is a record of bonafide work carried out by them, in the partial fulfillment of the requirement for the award of Degree of Bachelor of Engineering (Computer Science & Engineering) at KIIT Deemed to be university, Bhubaneswar. This work is done during year 2022-2023, under our guidance.

Date: 03/05/2023

Dr. Amiya Ranjan Panda
Project Guide

Acknowledgements

We are profoundly grateful to **Dr. Amiya Ranjan Panda** of **School of Computer Engineering** for his expert guidance and continuous encouragement throughout to see that this project meets its target since its commencement to its completion.

KUNAL RANJIT

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ABSTRACT

The "**Hotel Check-in Abandonment Forecasting Model** " project aims to provide an accurate forecast of hotel booking cancellations. Cancellations can have a significant impact on revenue, which affects decisions in the hotel industry. To address this issue, the project uses a machine learning-based cancellation model that combines data science tools with human judgment and interpretation to predict cancellations.

The project demonstrates how predictive analysis can contribute to synthesizing and predicting booking cancellations. It also aims to give users relaxation by providing full prediction and analysis to help them make informed decisions about applying to a particular hotel.

The project uses various algorithms such as Logistic, KNN, Random Forest, Decision Tree, etc. to classify data and evaluation matrices to separate categorical data into specific types. By entering certain fields, users can obtain cancellation predictions at the desired level. This helps prevent poor room management by hotels and improves the customer experience.

Keywords: LogisticRegression, KNeighbors Classifier, Decision Tree Classifier, RandomForest Classifier, Naive Bayes Classifier, XGboost , Feature Selection , Price optimization, Revenue Management, Predictive modeling.

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Chapter 1

Introduction

Booking cancellations have a significant impact on demand-management decisions in the hospitality industry. To mitigate the effect of cancellations, hotels implement rigid cancellation policies and overbooking tactics, which in turn can have a negative impact on revenue and on the hotel reputation. Therefore, it's important for stakeholders to minimize the rate of booking cancellation in order to obtain high revenue by maximizing the number of rooms available in the hotel. The best way to gain occupancy is to make predictions using machine learning so that we know who will cancel the order beforehand, in a sense to avoid profit losses. In particular, hoteliers can benefit from the prediction on individual cancellation, rather than overall cancellation rates, to identify customers at the highest risk of canceling in advance, thereby avoiding huge losses when it is not considerably late.

Chapter 2

Basic Concepts/ Literature Review

2.1 Tools - The following tools are required for developing this project.

2.1.1 Jupyter notebook - JupyterLab is the latest web-based interactive

development environment for notebooks, code, and data. Its flexible interface allows users to configure and arrange workflows in data science, scientific computing, computational journalism, and machine learning. A modular design invites extensions to expand and enrich functionality.

This project was created using the following languages and libraries. An environment with the correct versions of the following libraries will allow re-production and improvement on this project.

2.1.2 Python version: 3 - Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation via the off-side rule.

Matplotlib version: 3.0.3 - Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python. Matplotlib makes easy things easy and hard things possible. Create publication quality plots. Make interactive figures that can zoom, pan, update.

Seaborn version: 0.9.0 - Python Seaborn library is a widely popular data visualization library that is commonly used for data science and machine learning tasks. You build it on top of the matplotlib data visualization library and can perform exploratory analysis. You can create interactive plots to answer questions about your data.

Sklearn version: 0.20.3 - Scikit-learn (Sklearn) is the most useful and robust library for machine learning in Python. It provides a selection of efficient tools for machine learning and statistical modeling including classification, regression, clustering and dimensionality reduction via a consistent interface in Python.

Numpy 1.24.3 - NumPy can be used to perform a wide variety of mathematical operations on arrays. It adds powerful data structures to Python that guarantee efficient calculations with arrays and matrices and it supplies an enormous library of high-level mathematical functions that operate on these arrays and matrices.

Pandas 2.0.1 - pandas is a Python package providing fast, flexible, and expressive data structures designed to make working with “relational” or “labeled” data both easy and intuitive. It aims to be the fundamental high-level building block for doing practical, real-world data analysis in Python.

Python - Tabulate - Pretty-print tabular data in Python, a library and a command-line utility. The main use cases of the library are: printing small tables without hassle: just one function call, formatting is guided by the data itself.

Data Science Concepts Used:

Machine Learning (ML) - Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

Hypothesis Testing - Hypothesis testing is a statistical method that is used in making statistical decisions using experimental data. Hypothesis Testing is basically an assumption that we make about the population parameter.

Time Series- Time Series Analysis in Python considers data collected over time might have some structure; hence it analyzes Time Series data to extract its valuable characteristics.

Data Visualization - Data visualization is a field in data analysis that deals with visual representation of data. It graphically plots data and is an effective way to communicate inferences from data. Using data visualization, we can get a visual summary of our data. With pictures, maps and graphs, the human mind has an easier time processing and understanding any given data.

Data Cleaning - Data cleaning is the process of identifying and fixing incorrect data. It can be in incorrect format, duplicates, corrupt, inaccurate, incomplete, or irrelevant. Various fixes can be made to the data values representing incorrectness in the data.

Data Exploration - Data exploration is the first step in data analysis involving the use of data visualization tools and statistical techniques to uncover data set characteristics and initial patterns.

Feature Engineering- Feature engineering is a machine learning technique that leverages data to create new variables that aren't in the training set. It can produce new features for both supervised and unsupervised learning, with the goal of simplifying and speeding up data transformations while also enhancing model accuracy.

Chapter 3

Problem Statement / Requirement Specifications

The main objective of this project is to maximize revenue and profits of hotels by using machine learning techniques to reduce cancellations for hotels located in cities and resorts. It has been noticed from year to year that there has been an increase in the number of cancellations due to which some hotels have adopted the mindset that high cancellation is the new norm of the industry. This trend of cancellation results in unsold rooms, which brings loss in hotel revenue as the hotels are unable to predict the cancellation of rooms. The result of cancellation of bookings in the hospitality industry causes:

- Situations where hotels are overbooked
- Harm in social reputation of hotels
- Loss of revenue
- Pricing, labor allocation and inventory decisions

3.1 Project Planning

Requirements:

- How Cancellations are Affected by the Market Segment Of Booking ?
- How is cancellation affected by the lead time of a booking ?
- What is the rate of cancellation of booking outside Portugal and booking that is made in Portugal ?
- What are the other factors that are affecting the booking cancellation of hotels ?
- Which machine learning algorithm has the highest accuracy while predicting the cancellations of hotel bookings ?

Steps To Be Followed:

- **Data Cleaning :**

Data cleaning means removal or fixing of bad data in our data set. Bad data could be: Empty cells; Duplicates; Data in wrong format; Wrong data.

- **Exploratory Data Analysis :**

Exploratory data analysis (EDA) is used by data scientists to analyze and investigate data sets and summarize their main characteristics, often employing data visualization methods.

- **Feature Selection for machine learning process:**

Feature selection is the process of decreasing the input variable to our model by using only relevant data and getting rid of noise in the data. It is the process by which relevant features are automatically chosen for our machine learning model based on the type of problem we are trying to solve.

- **Model Building:**

Model building in machine learning is the process of creating a mathematical representation by generalizing and learning from training data. Then, the built machine learning model is applied to new data to make predictions and obtain results.

There are 3 types of machine learning models:

- Supervised Learning.
- Unsupervised Learning.
- Reinforcement Learning.

3.2 System Design

3.2.1 Design Constraint

Jupyter Notebook :

The Jupyter Notebook is the original web application for creating and sharing computational documents. It offers simple, streamlined, document-centric experience. Project Jupyter is a project to develop open-source software, open standards, and services for interactive computing across multiple programming languages.

3.3.2 System Architecture OR Block Diagram

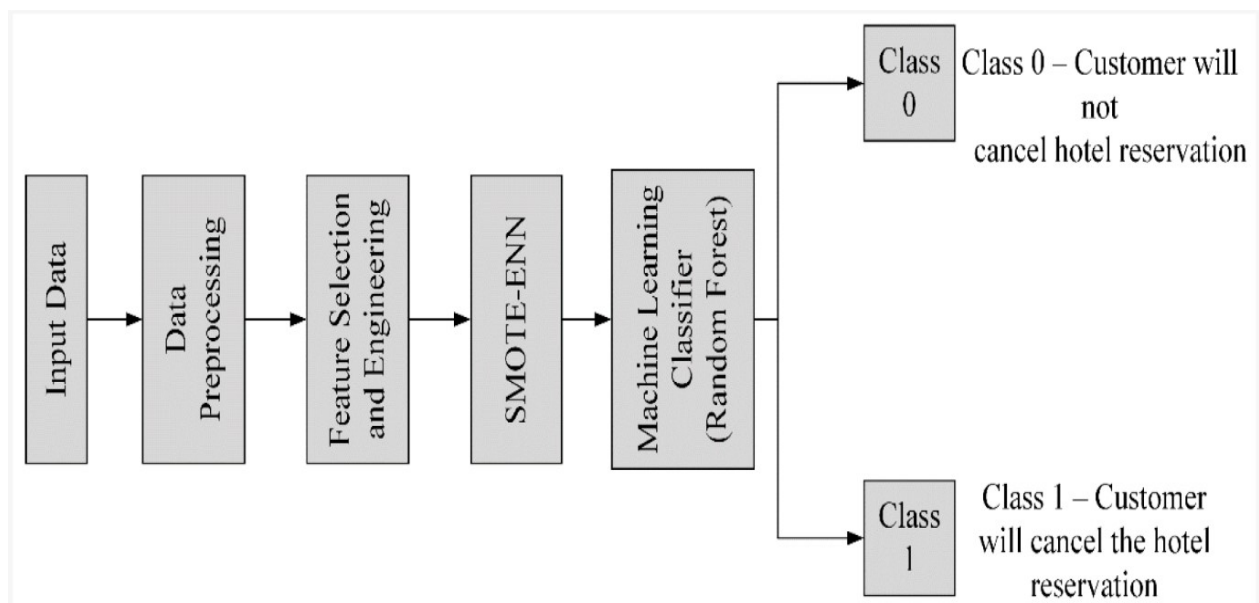


Fig 1: Block Diagram Representation Of Conceptual Methodology

Chapter 4

Implementation

During the project development, the following steps were taken:

4.1 Methodology

Data Loading and Reading: In this step, we loaded the dataset into the environment and read the data using Python's Pandas library.

Data Cleaning and Preprocessing: We removed missing values, duplicates, and outliers from the dataset. We also performed data imputation for missing values using different techniques like mean imputation, mode imputation, and regression imputation. Additionally, we scaled the numerical variables using standard scaling to ensure that all variables have a similar scale. Furthermore, we converted categorical variables into numerical variables using one-hot encoding.

Exploratory Data Analysis: In this step, we analyzed the origin of guests, price paid per night by guests, busiest months for bookings, month with the highest Average Daily Rate (ADR), and whether bookings were made for weekdays, weekends, or both.

Feature Engineering: We created new features like total number of guests, total number of nights booked, and average price per night.

Feature Encoding: We transformed categorical variables into numerical variables using one-hot encoding.

Outlier Detection and Handling: We detected and handled outliers using different techniques like Z-score, Tukey's method, and Isolation Forest.

Feature Selection: We selected important features using correlation and univariate analysis.

Model Building: We built a machine learning model using various algorithms like Linear Regression, Random Forest Regression, and XGBoost Regression.

Model Cross-Validation: We performed cross-validation to evaluate the performance of the machine learning model.

Experimenting with Multiple Algorithms: We experimented with multiple algorithms for model building to find the best performing one.

4.2 Testing OR Verification Plan

We tested the machine learning model using various test cases to ensure that the model is performing well on different datasets. We also performed hyperparameter tuning to improve the performance of the model.

Test	Test Case Title	Test Condition	System Behavior	Expected Result
T01	Data Loading Test	The data loading function is called with a valid input file path.	The function should read the input file and load the data into memory.	The data is loaded without errors and is available for further processing.
T02	Outlier Detection Test	The outlier detection function is called with a sample dataset containing known outliers.	The function should identify the outliers and mark them for removal.	The identified outliers should be removed from the dataset and the remaining data should be suitable for further processing.

4.3 Result Analysis OR Screenshots

In this subsection, we present the output of the experiment or study in terms of some **graphs, plots**. We have generated various plots like **scatter plot, box plot, histogram, and correlation matrix** to visualize the data and understand the relationships between variables.

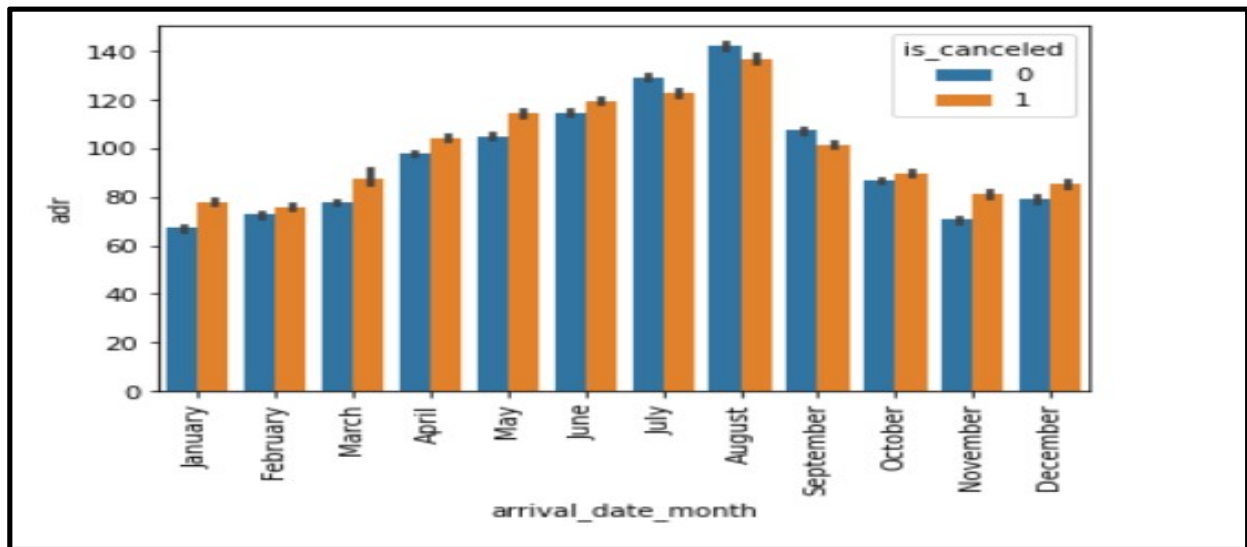


Fig 2 : Graphic Visualization of Average daily Rate and Arrival date month

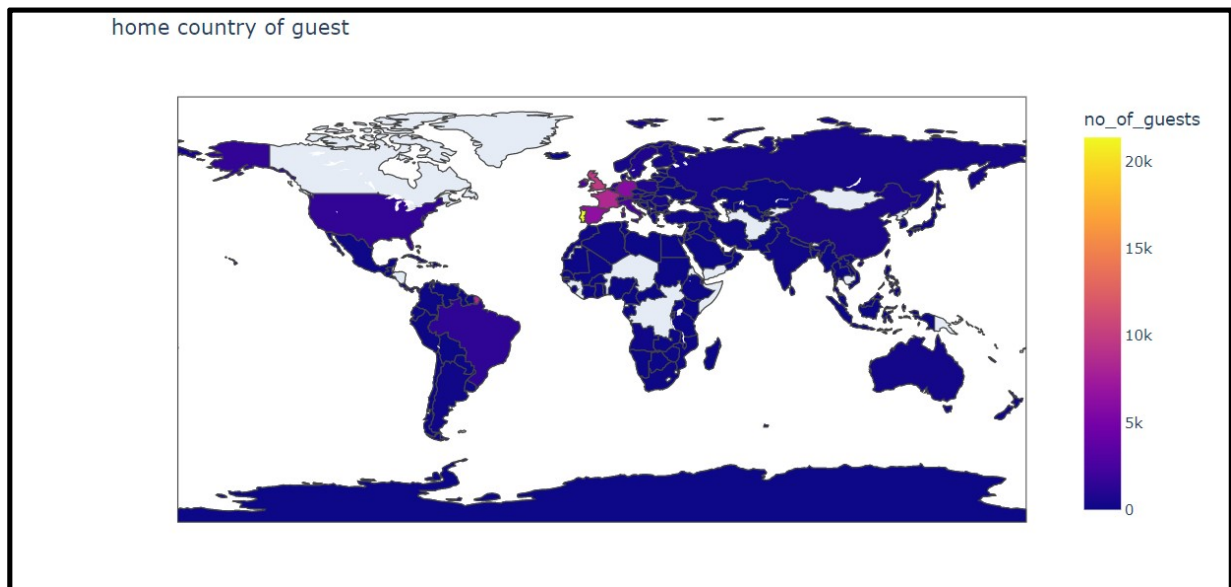


Fig 3: Graphics Visualization Of Guests

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MODEL PERFORMANCE					
Model	Accuracy	Precision	Recall	F1 Score	ROC AUC
Naive Bayes	0.577861	0.467029	0.935571	0.623041	0.65037
Logistic Regression	0.793142	0.818158	0.572483	0.67362	0.748414
Decision Tree	0.813978	0.747886	0.755961	0.751902	0.802218
KNN	0.816529	0.791731	0.689283	0.736964	0.790736
XGBoost	0.834815	0.830451	0.699901	0.759607	0.807468
Random Forest	0.85176	0.839193	0.745253	0.789439	0.830171

Best Model: Random Forest with Accuracy of 85.18%

```
=====
Best Model: Random Forest
Accuracy Score: 85.18%
Precision Score: 83.92%
Recall Score: 74.53%
F1 Score: 78.94%
ROC AUC Score: 83.02%
=====
```

Final Output Of ML Model (Random Forest)

4.4 Quality Assurance

We followed the guidelines and standards set by our organization to ensure the quality of the project. We also obtained feedback from our team members and friends to improve the project's quality.

Chapter 5

Standards Adopted

5.1 Design Standards

- Defined project objectives and scope clearly
- Used appropriate design patterns and principles
- Followed industry-standard frameworks and architectures
- Used modular and scalable design approaches
- Considered security and privacy requirements
- Documents the design decisions and rationale

5.2 Coding Standards

- Used meaningful variable and function names
- Commented the code to improve its readability and maintainability
- Used consistent coding style throughout the project
- Used version control systems to manage code changes
- Used automated code analysis tools to detect errors and maintain quality

5.3 Testing Standards

- ISO/IEC 9126: Software engineering - Product quality
- ISO/IEC 12207: Software life cycle processes
- IEEE 829: Standard for Software Test Documentation
- IEEE 1061: Standard for Software Quality Metrics Methodology
- Defining test cases and test scenarios
- Conducting unit testing, integration testing, and system testing
- Performing regression testing and acceptance testing
- Tracking defects and issues using a defect tracking tool
- Generating test reports and documentation

Chapter 6

Conclusion and Future Scope

6.1 Conclusion

Random Forest Has the Best Accuracy Among All Algorithms That We Tried from all the evaluation matrix to predict hotel cancellation classification case, we see that Random Forest has the best accuracy when it comes to predicting hotel cancellation based on certain features (85.2 %). This model enables hotel managers to mitigate revenue loss derived from booking cancellations and to mitigate the risks associated with overbooking (relocation costs, cash or service compensations, and, particularly important today, social reputation costs). This project also allows hotel managers to implement less rigid cancellation policies, without increasing uncertainty. This has the potential to translate into more sales, since less rigid cancellation policies generate more bookings.

6.2 Future Scope

A hotel check-in abandonment forecasting model can provide valuable insights for hotel management to optimize their operations and improve guest experience. Here are some potential **future scopes of such a model**:

1)Real-time optimization: The model can be integrated with real-time data feeds to allow hotel staff to make informed decisions on the spot. For example, if the model predicts high check-in abandonment rates during a particular time of day, the staff can allocate more resources to that time to ensure a smooth check-in process.

2)Personalization: The model can be customized to take into account the guest's history, preferences, and behavior to provide a more personalized experience. For instance, if the model predicts that a guest is likely to abandon check-in due to a long queue, the hotel can offer them a personalized check-in service.

3)Revenue optimization: The model can help hotels optimize their revenue by predicting the optimal number of rooms to overbook. By considering the historical data and trends, the model can suggest the right amount of overbooking without risking the guest experience.

4)Customer loyalty: By reducing check-in abandonment rates, the model can help hotels improve customer loyalty. When guests have a seamless and efficient check-in experience, they are more likely to return and recommend the hotel to others.

5)Continuous improvement: The model can help hotels continuously improve their operations by providing insights into the causes of check-in abandonment. By analyzing the data, the hotel can identify areas for improvement and implement changes to reduce abandonment rates over time.

Overall, a hotel check-in abandonment forecasting model has a lot of potential for enhancing guest experience and optimizing hotel operations. As technology advances and more data becomes available, the scope of such a model will only increase.

References

- <https://Jupyter Notebook>
- <https://www.python.org/doc/>
- <https://matplotlib.org/stable/index.html>
- <https://pandas.pydata.org/docs/>
- <https://seaborn.pydata.org/>
- <https://scikit-learn.org/stable/modules/generated/sklearn.ensemble.RandomForestClassifier.html>
- <https://kaggle.com>

INDIVIDUAL CONTRIBUTION REPORT:

HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL

KUNAL RANJIT
1905258

Abstract: The “HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL” project aims to predict hotel booking cancellations using a machine learning-based cancellation model. The project uses various algorithms and evaluation matrices to classify data and provide users with accurate predictions. Its goal is to prevent poor room management and improve the customer experience in the hotel industry.

Individual contribution and findings: Initially I helped in the task of data loading & reading to build an accurate hotel check-in abandonment forecasting model, the data loading and reading process should be optimized based on the data size, format, and computing resources available. I tried Data cleaning and preprocessing with critical steps to ensure that the data was of high quality and suitable for analysis.

This involves transforming the data into a suitable format and dealing with issues such as missing values, outliers, and encoding categorical variables. Exploring data analysis techniques I have then tried to identify patterns, trends, and possible predictors in the data, such as the origin of hotel guests. Understanding guest behavior and preferences can guide marketing and promotional efforts, leading to more accurate and effective modeling.

Individual contribution to project report preparation: In the report, I have contributed to the abstract ,conclusions as well as future scope of the project.

Individual contribution for project presentation and demonstration: I will be presenting the abstract as well as conclusions of the project and demonstrating the various data loading & reading,data cleaning, and EDA used in the project along with future scope of the project.

Full Signature of Supervisor:

.....

Full signature of the student:

KUNAL RANJIT

.....

INDIVIDUAL CONTRIBUTION REPORT:

HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL

MUGDHA HAZRA
1928106

Abstract: The “HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL” project aims to predict hotel booking cancellations using a machine learning-based cancellation model. The project uses various algorithms and evaluation matrices to classify data and provide users with accurate predictions. Its goal is to prevent poor room management and improve the customer experience in the hotel industry.

Individual contribution and findings: I imported the Lasso regression model and feature selection module from scikit-learn, and then used them to fit a Lasso regression model to our data. I set the regularization strength parameter (alpha) to 0.005 and use it to select the most important features from my data. You then split my data into training and testing sets using the train_test_split function.

I have trained and evaluated several machine learning models on a given dataset using various metrics, including accuracy, precision, recall, F1 score, and ROC AUC score. The models used include logistic regression, naive Bayes, random forest, decision tree, KNN, and XGBoost. The results are stored in a table, and the best performing model is printed along with its performance metrics.

Individual contribution to project report preparation: I have contributed to the report's implementation, methodology, testing and verification plan, result analysis and screenshots, adoption of quality assurance standards, design standards, coding standards, and testing standards.

Individual contribution for project presentation and demonstration: I will be presenting a project that demonstrates building a machine learning model, performing model cross-validation, and experimenting with multiple algorithms for model building.

Full Signature of Supervisor:

.....

Full signature of the student:

MUGDHA HAZRA

.....

INDIVIDUAL CONTRIBUTION REPORT:

HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL

SHAMBHAVI
1906427

Abstract: The “HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL” project aims to predict hotel booking cancellations using a machine learning-based cancellation model. The project uses various algorithms and evaluation matrices to classify data and provide users with accurate predictions. Its goal is to prevent poor room management and improve the customer experience in the hotel industry.

Individual contribution and findings: I have worked on analyzing whether the bookings were made for weekdays, weekends or both with the help of Exploratory Data Analysis(EDA). I have used a crosstab to get the information about how many days a customer stays in the hotel. Then I have plotted the graph to show when the bookings are made.

I have used Feature engineering to create new features such as ‘family’ for the bookings that are done together.

I have also used Feature Encoding to transform categorical variables into numerical ones. To do so I have applied mean encoding to categorical features so that it can be transformed into numerical features.

Individual contribution to project report preparation: In the report, I have contributed to writing the problem statement along with the requirement specification for our project. I have also added the block diagram of Representation Of Conceptual Methodology of our project.

Individual contribution for project presentation and demonstration: I will be presenting the problem statement and the block diagram.

Full Signature of Supervisor:

.....

Full signature of the student:

SHAMBHAVI

.....

INDIVIDUAL CONTRIBUTION REPORT

HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL

SHRESHTHA ROY
1928119

Abstract: The “HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL” project aims to predict hotel booking cancellations using a machine learning-based cancellation model. The project uses various algorithms and evaluation matrices to classify data and provide users with accurate predictions. Its goal is to prevent poor room management and improve the customer experience in the hotel industry.

Individual contribution and findings: In the project, I have helped with handling the outliers in the dataset. Firstly I concatenated the numerical and categorical data and deleted the column of target variable. Among all the columns in the dataset two of the columns showed the presence of outliers in it through the distplot function in python. The outliers in those columns were handled by passing those columns through a function and then they were passed through a numpy function of python called `log1p` which returns $\log(1+\text{number})$, computed in a way that is accurate even when the value of number is close to zero.

I also did feature selection using correlation and univariate analysis. For this I have used the correlation function called `.corr()` function of pandas using which I then removed the columns which were very highly or very weakly correlated with the target column. I have also helped in picking up important features for model selection.

For this I have imported Lasso from sklearn package and used the `linear_model` module and also imported `SelectFromModel` from sklearn package and used the `feature_selection` module with an alpha value of 0.005.

Individual contribution to project report preparation: I have contributed in writing about the introduction of the project as well as the basic concepts used in the project.

Individual contribution for project presentation and demonstration: I will be presenting the introduction and basic concepts used in the project and demonstrating the various data cleaning, feature encoding, handling outlier and selecting features for modeling techniques adopted in the project.

Full Signature of Supervisor:

.....

Full signature of the student:

SHRESHTHA ROY

.....

INDIVIDUAL CONTRIBUTION REPORT:

HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL

SRISHTY GUPTA

1906441

Abstract: The “HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL” project aims to predict hotel booking cancellations using a machine learning-based cancellation model. The project uses various algorithms and evaluation matrices to classify data and provide users with accurate predictions. Its goal is to prevent poor room management and improve the customer experience in the hotel industry.

Individual contribution and findings: In the project, I have used Exploratory Data Analysis (EDA) to analyze the price paid per night by guests. I have used a boxplot to show the price paid per night by keeping the room type on x-axis and average daily rate on y-axis.

Additionally, I have analyzed the busiest month for bookings by using the `.value_counts()` function. By doing that, we learned that the busiest month is August, which has 3257 guests in resorts and 5367 guests in City hotels. Also the least busiest month is January, having 1866 guests in resorts and 2249 guests in city hotels. After analyzing this, I plotted a line graph depicting the same.

Finally, I analyzed the month having the highest Average Daily Rate(ADR). ADR is used to indicate the average revenue earned for an occupied room on a given day. I plotted a line graph by which we got to know that city hotels have more ADR than resorts and the highest ADR is observed in the month of August. Next, I plotted a box plot depicting the same.

Individual contribution to project report preparation: In the report, I have contributed in writing the problem statement as well as the project planning. Along with this, I have written the design constraint.

Individual contribution for project presentation and demonstration: I will be presenting the project planning and block diagram.

Full Signature of Supervisor:

.....

Full signature of the student:

SRISHTY GUPTA

.....

TURNITIN PLAGIARISM REPORT
(This report is mandatory for all the projects and plagiarism must be below 25%)



Don't Worry! This report is 100% safe & secure. It's not available publically and it's not accessible by search engines (Google, Yahoo, Bing, etc)

Report Title:	HOTEL CHECK-IN ABANDONMENT FORECASTING MODEL
Content	Unique Content
Report Generated Date:	3 May, 2023
Total Words:	4402
Total Characters:	29938
Keywords/Total Words Ratio:	0%
Excluded URL:	No
Unique:	92%
Matched:	8%